



List of accepted contributions (including abstracts), sorted by Contribution type and Name of the author

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Contribution	Name	Institute	Country	Title	Abstract	ID	Session
Invited	Atteia	irap	fr	Gamma-Ray Bursts, witnessing the birth of stellar mass black holes	Gamma-ray bursts are associated with catastrophic cosmic events. They appear when a new black hole, created after the explosion of a massive star or the merger of two compact stars, quickly accretes the matter around it and ejects a transient relativistic jet in our direction. With their extreme brightness and the complex physics they involve, GRBs appear as remarkable tools of modern astrophysics. This review discusses the high-energy emission of GRBs, the favored progenitor models, some unsolved mysteries, and the use of GRBs for cosmology and for the search of new astronomical messengers, like neutrinos or gravitational waves. The future of this field is also addressed, with the advent of new astronomical facilities which will transform the field.	146	GRBs
Invited	Gehrels	gsfc	us	Current and Future Gamma Ray Astronomy related to INTEGRAL	We are in a rich period of discovery in gamma-ray astronomy with INTEGRAL, Swift, Fermi and AGILE all flying and returning data at the same time. INTEGRAL has opened a new window in the areas of fine imaging and spectroscopy. There are interesting deep observations at high latitude, but a highlight of the mission is deep and repeated scans of the galactic plane. New source classes such as highly-absorbed high mass X-ray binaries and supergiant fast X-ray transients have been discovered. The science is enhanced by coordinated multiwavelength observations by the current fleet of missions. Future prospects are not currently good for a future large gamma-ray mission. However, smaller missions are under study and there are excellent opportunities for coordinated observations with new ground facilities from radio to very high energy gamma rays.	138	Survey
Invited	Hartmann	clemsu	us	Gamma-Ray line astronomy with INTEGRAL	Not known	147	Nucleos
Invited	King	leiu	uk	Supermassive Black Holes and their effects on their Galactic Hosts	Not known	145	AGNs
Invited	van den Heuvel	amsu	nl	INTEGRAL's contributions to the understanding of the evolution of X-ray Binaries	Not known	144	Binaries
Solicited	Bassani	inafb	it	Review on Active-Galactic Nuclei at hard X-ray energies	Hard X-ray surveys are an important tool for the study of active galactic nuclei (AGN): they provide almost an unbiased view of absorption in the extragalactic population, allow the study of spectral features such as reflection and high energy cut-off which would otherwise be unexplored and favour the discovery of the most extreme blazars, i.e. those that are at the extreme of the blazar sequence and happen to be prominent in the 20-100 keV band. In this talk I will explore the absorption properties of a large sample of INTEGRAL detected AGN including an update on the fraction of Compton thick objects. For a sub-sample of 87 sources, which represent a complete set of bright AGN, I will discuss the hard X-ray (20-100 keV) spectral properties also in comparison with SWIFT/BAT 58 months data providing information on spectral and flux variability, average spectral shape and BAT/IBIS cross calibration constant. For this complete sample I will also present broad band data using mostly XMM observations, in order to explore the complexity of AGN spectra both at low and high energies and to highlight the variety of shapes. In the field of jet dominated sources or blazars I will describe a few examples at the extreme of the blazar sequence: small jet powered objects or TeV emitting BL Lacs having a synchrotron peak at tens of keV and large jet powered objects or flat spectrum radio QSOs having a Compton peak in the MeV sub-MeV region. Future prospects for AGN studies with INTEGRAL will also be outlined.	158	AGNs

Solicited	Bykov	stpeteru	ru	Energetic particle acceleration by collisionless shocks	Astrophysical plasma flows carrying magnetic fluctuations of a broad dynamical range of scales are interacting with relativistic particles. The interaction results in energetic particle acceleration, a modification of the plasma flows and specific mechanisms of magnetic field amplification in collisionless shocks. Supernova remnants both of the shell type (SN 1006, Tycho SNR, RX J1713.7–3946 and others) and the plerionic (Crab Nebula) show nonthermal emission features that are well interpreted as synchrotron emission of ultrarelativistic electrons accelerated at shock waves. We present results of nonlinear modeling of images, spectra and lightcurves for supernova remnants and pulsar wind nebulae with efficient particle acceleration and strong magnetic field fluctuations to be confronted with observations.	161	Accel
Solicited	Courvoisier	isdc	ch	Active Galactic Nuclei: present observations and prospects	Not known	152	AGNs
Solicited	Falanga	issi	ch	Accreting millisecond X-ray pulsars: 10 years of INTEGRAL observations	During the last 10 years, INTEGRAL gave a unique contribution to the study of accreting millisecond X-ray pulsars (AMXPs). Three of these objects have also been discovered by INTEGRAL. As the number of known objects in this class has grown, the INTEGRAL observations above 20 keV contributed substantially to the science of these AMXPs. I will present a detailed review of all the AMXPs observed with INTEGRAL and discuss their physical interpretation, outburst lightcurve profile, timing, spectral, and thermonuclear type-I X-ray bursts behaviours.	007	Binaries
Solicited	Fürst	caltech	us	The Nuclear Spectroscopic Telescope Array Science Program	The Nuclear Spectroscopic Telescope Array (NuSTAR) mission, launched on June 13, 2012, is the first space-based focusing high-energy X-ray telescope. NuSTAR operates in the band from 4-79 keV, extending the sensitivity of focusing far beyond the ~10 keV high energy cutoff achieved by any previous X-ray telescope. Using its unprecedented combination of sensitivity, spatial and spectral resolution, NuSTAR will pursue five primary scientific objectives: 1) probing obscured AGN activity in the nearby (z<2) universe by surveying selected regions of the sky, 2) studying the population of hard X-ray emitting compact objects in the Galaxy by mapping the central regions of the Milky Way, 3) studying the non-thermal radiation in young supernova remnants both in hard X-ray continuum and emission from the radioactive element ⁴⁴ Ti, 4) observing blazars contemporaneously with ground-based radio, optical and TeV telescopes, as well as with Fermi to constrain the structure of AGN jets, and 5) observing line and continuum emission from core collapse supernovae in the local group, and from nearby Type 1a events to constrain explosion models. During its baseline two-year mission, NuSTAR will also undertake a broad program of targeted observations that includes Ultraluminous X-ray sources, known AGN and Galactic Binaries, magnetars, starburst galaxies, and even our Sun. This talk will discuss the baseline science program, and present early results from on-orbit performance data.	163	Survey
Solicited	Götz	ceas	fr	INTEGRAL Results on Gamma-Ray Bursts	Despite being a general observatory, and not a GRB oriented mission INTEGRAL has contributed to several important discoveries in the GRB field. This has been obtained thanks to its unprecedented localization capabilities, and sensitivity in the soft gamma-ray domain, I will review the main results obtained during the last 10 years with and thanks to INTEGRAL, including the discovery of one of the few GRBs spectroscopically associated with a Supernova, the first measurement of variable polarization in the GRB prompt emission, the indication of the existence of a low-luminosity population of GRBs, as well as the recent application of GRBs as probes for the fundamental physics. I will finally summarize the main spectral characteristics of the INTEGRAL sample, and make the point on the lessons learnt from INTEGRAL in the perspective of designing future GRB dedicated missions.	121	GRBs
Solicited	Isern	ieec	es	Observations of SN2011fe with INTEGRAL	SN2011fe was detected by the Palomar Transient Factory on August 24th 2011 in M1011 few hours after the explosion. From the early spectra it was immediately realized it was a Type Ia supernova thus making this event the brightest one discovered in the last twenty years. In this paper the observations performed with the instruments on board of INTEGRAL (SPI, IBIS/ISGRI and OMC) before and after the maximum of the optical light as well as the interpretation in terms of the existing models of γ -ray emission from such kind of supernovae are reported. Both, SPI and IBIS/ISGRI, have only been able to provide upper limits to the expected emission due to the decay of ⁵⁶ Ni. These bounds allow to reject explosions involving a massive white dwarf in the sub-Chandrasekhar scenario. On the other hand, the optical light curve obtained with the OMC camera suggests that the event was produced by a delayed detonation of a CO white dwarf that produced ~ 0.5 M_{\odot} of ⁵⁶ Ni. In this particular case, INTEGRAL would have only been able to detect this early γ -ray emission if the supernova was occurred at a distance ~ 2 -3 Mpc, although the brightest event could be visible up to distances larger by a factor two.	045	Nucleos

Solicited	Laurent	apc	fr	INTEGRAL observations of gamma-ray polarized sources: from the Crab pulsar to Cygnus X-1	In complement to spectro-imaging observations, gamma-ray polarimetry provides a unique insight into the geometry and magnetic configuration of compact gamma-ray sources, such as neutron stars or black holes. These measurements were unsuccessful up to now because of intrinsic asymmetries in the detector response and of non-uniformities in the background dominated signals, which induce pseudo polarimetric signals, even from an unpolarized source. Due to the unprecedented spectral and timing capabilities of Integral, and thanks to its coded mask imaging technics, which efficiently suppresses most of the background contribution, we have measured linearly polarized emission from the brightest cosmic high energy sources. We were able to measure for the first time, at energies above 200 keV, a clear signal from several gamma-ray sources such as the Crab pulsar, the black hole candidate Cygnus X-1, and a Gamma-Ray Burst, GRB 041219A. These observations have enabled us to put strong constraints on the physical process at work in these sources, and, after a short review of Compton polarimeter principles, I will describe these Integral results and their implication on our knowledge of compact objects.	159	SNR/pulsar/polar
Solicited	Revnitsev	iki	ru	Global view of the Galaxy with INTEGRAL: populations of binaries and extended emission	Not known	150	Survey
Solicited	Sidoli	inaf	it	Supergiant Fast X-ray Transients: a review	Supergiant Fast X-ray Transients are a class of Galactic High Mass X-ray Binaries with supergiant companions. Their extreme transient X-ray flaring activity was unveiled thanks to INTEGRAL/IBIS observations. The SFXTs dynamic range, with X-ray luminosities from 1032 erg/s up to 1037 erg/s, and long time intervals of low X-ray emission, are puzzling, given that both their donor star properties and their orbital and spin periodicities seem very similar to those displayed by massive binaries with persistent X-ray emission. Clumpy supergiant winds and accretion instabilities are the main mechanisms invoked to explain their behavior, but still several open issues remain. A review of the main recent observational results will be outlined, together with a summary of the new scenarios proposed to explain their bright flaring X-ray activity.	151	Binaries
Solicited	Staubert	tueb	de	Can the study of Her X-1 help in understanding Accreting X-ray Binary Pulsars?	Her X-1 is one of the the most intensively studied Accreting X-ray Binary Pulsars (AXBPs). This is largely because it is a bright and persistent X-ray pulsar, showing the largest variety of observable phenomena, partly due to the favorable geometry in observing the binary nearly edge-on. Observed are at least six different periods (among them the 35d super-orbital period), a time and luminosity dependent cyclotron line and time dependent multi-peak pulse profiles. INTEGRAL has extensively observed Her X-1 and greatly contributed to our current understanding. Even though the basic principles working in AXBPs are believed to be understood, the detailed physics of many of the observed phenomena is, to a large extent, still a mystery. We will review the current state of our understanding of this complex cosmic machine which is clearly governed by a high degree of physical feedback between its physical components (the optical star, the highly magnetized neutron star and its magnetosphere, the precessing accretion disk, the emitted X-ray beams, which illuminate the accretion disk, and the optical star, et cetera). The feedback is evident from a number of observed correlations between the various properties. Fundamental questions are: Does the neutron star show free precession? If so, what is the relationship to the precession of the accretion disk? How is the spectrum (continuum and cyclotron line) produced and what makes the observed cyclotron centroid energy change (with luminosity, with pulse phase, with 35d phase, with time)? What is the structure of the accretion column and the significance of distinguishing between super- and sub-Eddington accretion regimes? How are the multi-peak pulse profiles produced, why do they change with 35d phase? We will discuss, how the study of Her X-1 will help in understanding Accreting X-ray Binary Pulsars in general by comparison with several other well known AXBPs. 1	002	Binaries
Solicited	Stella	sapienza	it	Fundamental Physics with X-Ray Binaries	Not known	165	Binaries
Solicited	Strong	mpe	de	Non-thermal emission from cosmic rays in the interstellar medium from MHz to TeV	The current experiments INTEGRAL/SPI and Fermi-LAT give us a wide-band view of the emission from the interstellar medium, from tens of keV to TeV. Other data from CGRO-COMPTEL are still the only available at MeV energies. Synchrotron radiation from MHz to tens of GHz gives an additional independent handle on the lepton component of cosmic rays. The non-thermal processes involved are strictly connected, and provide tighter constraints on processes involving cosmic rays than when considered separately. In particular, inverse Compton emission from cosmic-ray electrons and positrons extends over the entire gamma-ray range, and bremsstrahlung is also significant. The combined constraints help to disentangle the hadronic emission which dominates at higher energies. I will review the current observational and theoretical situation.	032	diffuse
Solicited	Terrier	apc	fr	The Galactic Centre after Integral observations	We discuss the results of Integral observations of the Galactic centre. In particular, we show what has been learned on the Galactic Centre hard X-ray emission. We also show that several molecular clouds in the Galactic centre emit intense hard X-ray and 6.4 keV line emission. This emission has been found to be variable on timescales of years and is likely the result of an intense illumination by a bright outburst of a powerful hard X-ray source in the Galactic Centre, most likely Sgr A*. We present the Integral results as well as some results of follow-up observations with Chandra and XMM-Newton. We discuss the implications on the origin and duration of the outburst.	142	diffuse

Solicited	Weisskopf	msfc	us	Observations of the Crab Nebula with the Chandra X-Ray Observatory	The Crab nebula and its associated pulsar have been the target of thousands of observations at all wavelengths over the years. Nevertheless, the system continues to provide new surprises and observational insights into its physical mechanisms. We shall discuss a number of new results we have obtained through Chandra observations. Results include highly detailed pulse-phase spectroscopy which poses challenges to our understanding of pulsar emission mechanisms, a new and precise look at the pulsar geometry, a study of the spatial and temporal variation(s) of the southern jet, and the results of a search for the site of the recently-discovered gamma-ray flares. We have been using the Chandra X-Ray observatory to monitor the Crab on a monthly cadence since just after the 2010 September gamma-ray flare. We were fortunate to trigger series of preplanned target of opportunity observations during the 2011 April flare. And we present the results of these particular observations.	149	SNR/pulsars/polar
Solicited	Wilms	erla	de	Black hole X-ray Binaries	Not known	164	Binaries
Contributed	Alexander	muen	de	Understanding a Nearby Massive-Star Region: Scorpius-Centaurus	The Scorpius-Centaurus OB Association (Sco OB2) is at a distance of 145 pc the nearest region of recent massive star formation. It consists of three subgroups, Upper Scorpius (US), Upper Centaurus-Lupus (UCL), and Lower Centaurus-Crux (LCC) which have ages of about 5, 17, and 16 Myr. The gamma-ray-spectrometer SPI on INTEGRAL enables us to probe the nearby massive stars by means of radioactive ejecta from massive-star nucleosynthesis. We focus on Aluminium 26, which is expelled during Wolf-Rayet phase winds and core-collapse supernovae over 10-20 Myr after formation of a stellar group. Aluminium 26 emits γ -rays with an energy of 1809 keV and a radioactivity lifetime of 1 Myr. Compared to the evolutionary time scales of a stellar group this is a short time, while significantly beyond the characteristic time of other observables. Using all available messengers, such as radioactive ejecta, bubble shells, ionized-gas emissions, and remaining-star counts, population synthesis exploitation of such astronomy gives us the unique opportunity to test our understanding of massive star groups for consistency. Moreover, nucleosynthesis ejecta from the Sco-Cen subgroups, through their location and Doppler line shifts, can provide constraints on models of triggering successive generations of star formation, and on bulk motion, thus revealing the star formation history in the Scorpius Centaurus OB association. We report on analysis of 9 years of INTEGRAL data, and ways to exploit these in above context.	038	Nucleosynthesis
Contributed	Beckmann	apc	fr	Gamma-ray emitting radio galaxies at hard X-rays: Seyfert core or jet emission?	A number of radio galaxies has been detected by Fermi/LAT in the gamma-ray domain. In some cases, like Cen A and 3C 111, these objects have been seen even in the TeV domain by Cherenkov telescopes. Whereas the gamma-ray emission is likely to be connected with the non-thermal jet emission, dominating also the radio band, the situation is less clear at hard X-rays. While the smoothly curved continuum emission and the overall spectral energy distribution indicate a non-thermal emission, other features such as the iron line emission and the low variability appear to be rather of Seyfert type, i.e. created in the accretion disk around the central black hole. We investigate several prominent cases using combined X-ray and gamma-ray data in order to constrain the possible contributions of jet and accretion disk to the overall spectral energy distribution in radio galaxies. A picture emerges in which about half of the hard X-ray flux results from nonthermal jet emission, while the other half is generated in thermal inverse Compton processes close to the accretion disk.	010	AGNs
Contributed	Bird	soton	uk	The Timing Characteristics of the INTEGRAL populations	The INTEGRAL archive is a powerful resource for temporal studies, now spanning 10 years of observations of the hard X-ray sky. That hard X-ray sky is incredibly variable, and studies have been performed on a range of timescales from the search for faint GRBs, through the discovery of weeks-long orbital periods and recurrent outbursts in HMXBs, and even to a search for year-long super-orbital variations in LMXBs. I will review some of these projects, and present preliminary results from a variability-based survey of the galactic plane.	060	Survey
Contributed	Blay	valen	es	The paradigm of atypical HMXRBs: 4U 2206+54	4U 2206+54 does not belong to any of the predefined classes of High Mass X-Ray Binary Systems (HMXRBs). It shows a mixture of behaviors between the wind-fed accretion systems with a supergiant optical companion, and those systems with a neutron star accreting from the disc of a main sequence Be star. The nature of the compact component to the system has been clarified only recently with the discovery of long 5560 s pulsations, with a highly variable pulse shape, both with time and with energy. Absorption lines resembling cyclotron resonant scattering features (CRSF) have been marginally detected by different missions, but only in specified times, being the non-detection the common rule. The values of the magnetic field derived from the possible CRSF and those needed to explain the long spin period differ considerably. This system may be representative of an early stage of evolution of HMXRBs, a very difficult phase to observe. We discuss the pulse period and its variability, the orbital period, and the high energy properties of the source by comparing to what is predicted by evolutionary models and explore the possible connection with supergiant systems (2S 0114+650, GX 301-2, IGR J16358-4726) and main sequence/Be systems (X Per) which also possess a highly magnetized neutron star.	052	Binaries

Contributed	Bodaghee	berk	us	Clustering between HMXBs and OB associations in the MilkyWay	We present the first direct measurement of the spatial cross-correlation function of high-mass X-ray binaries (HMXBs) and active OB associations in the MilkyWay. This result relied on a sample containing 79 hard X-ray detected HMXBs (mostly IGRs) and 458 OB associations. Clustering between the two populations is detected with a significance above 7 for distances ≥ 1 kpc. Thus, HMXBs closely trace the underlying distribution of the massive star-forming regions that are expected to produce the progenitor stars of HMXBs. The average minimum separation of 0.4 ± 0.2 kpc between OB associations and HMXBs is consistent with the view that the latter have large runaway velocities (100 km s^{-1}). This suggests that the offset is mostly due to natal kicks acquired by the binary during the supernova phase (with a few exceptions). The characteristic scale of the correlation function indicates an average kinematical age (time between the supernova and X-ray phase) of 4 Myr for the HMXB population. Despite being derived from the "grand design" of our Galaxy, these signatures of HMXB evolution are consistent with theoretical expectations and observations of individual objects.	087	Survey
Contributed	Bordas	tueb	de	Gamma-ray observations of binary systems with H.E.S.S.	We will present the recent results on gamma-ray binaries obtained by the High Energy Stereoscopic System (H.E.S.S.) of Cherenkov telescopes. High and Very High Energy emission has been recently reported from a few of these systems by both space and ground-based observatories. These data are providing crucial information on the physics of relativistic outflows and the engines powering them. Yet, many questions remain open, for which further observations are required. New H.E.S.S. observations of the systems HESS J0632+057, PSR B1259-63 and the recently discovered source HESS J1018-589 will be reviewed, as well as the search for TeV emission from new candidates, including accreting and colliding-winds binary systems. The analysis of these new data confirms the predictions derived previously for some of those sources, but unexpected results are also found in a few cases, which will be discussed in the context of contemporaneous observations at lower X-ray and radio energies.	085	Binaries
Contributed	Bottacini	stan	us	The combined Survey of INTEGRAL/IBIS and Swift/BAT	According to the Active Galactic Nuclei (AGN) unified model, a super-massive black hole (SMBH) is at the center of the AGN and it powers the nuclear radiation. This radiation is efficiently absorbed by an optically thick gas-dust structure that plays a key role in the evolution of AGNs. The current surveys at hard X-ray energies (> 15 keV) of the INTEGRAL Soft Gamma-Ray Imager (IBIS/ISGRI) and of the Burst Alert Telescope (BAT) of the Swift satellite have proven to be a powerful technique in detecting AGNs in the local Universe ($z < 0.4$). IBIS/ISGRI and BAT are coded-mask telescopes. This imaging technique is known to suffer from systematic and statistical errors. In this talk I will show that IBIS/ISGRI and BAT are close enough in design so that their observations can be merged. The resulting survey is less susceptible to systematic and statistical noise. This allows detecting efficiently the weak radiation from obscured AGNs. The survey of this virtual new mission extends over a wide sky area of 6200 deg^2 sampling 113 sources. The flux sensitivity is 2 times better than current parent surveys and the source number density is higher. The scientific outcome from the study of this sample has been properly addressed to study the evolution of AGNs in the local Universe. Our results are used to make predictions for missions using focussing technology at hard X-ray energies. I discuss also the expected results when applying this survey to the entire sky.	057	Survey
Contributed	Bouchet	irap	fr	Measures of the components of the Galactic diffuse emission with INTEGRAL/SPI	The hard X-ray/soft gamma ray emission of the Galaxy consists of several components, linked to specific physical processes or sources populations. We use the SPI spectrometer aboard the INTEGRAL observatory to disentangle the spatial morphology and the spectral shape of these various contributions. Based on 6 years of data, we have measured a detailed ridge spectrum and constrained the spatial distribution of the emission from 20 keV to 2.5 MeV. The spectrum and its spatial distribution are in relatively good agreement with predictions from GALPROP models. In a second complementary step, the flux of the 511 keV positron annihilation line, the orthopositronium continuum, the ^{26}Al and the ^{60}Fe lines have been measured with improved precision. Their spatial distribution as well as other characteristics (positronium fraction, $^{26}\text{Al}/^{60}\text{Fe}$ ratio,...) have been estimated and compared with theoretical expectations.	097	diffuse
Contributed	Bozzo	isdc	ch	XMM-Newton and Swift observations of XTE J1743-363	XTE J1743-363 is a peculiar hard X-ray source which variability in the X-ray domain was associated to that typically observed from the so-called supergiant fast X-ray transients. However, the long-term decline in its activity and its properties in the IR domain suggested that XTE J1743-363 is a symbiotic X-ray binary. We report here on the results of the first high-sensitivity follow-up observation on the source performed in the soft X-ray domain with XMM-Newton and the long monitoring campaign performed with Swift/XRT.	107	Binaries
Contributed	Bromberg	huji	il	Separating the wheat from the chaff: a proper classification of the non-Collapsars GRBs.	It is a well known that GRBs are composed of two classes according to their duration, long and short. The general consensus is that the long GRBs arise from the collapse of massive stars (Collapsars), while the short GRBs have a different origin, probably neutron star merger (non-Collapsars). The dividing line is usually placed at 2 sec. This classification, however, ignores the fact that there is a large overlap in all of the high energy properties of the two population, and it is quite likely that there are short duration Collapsars which are mistakenly identified as non-Collapsars and vice versa. In this talk I will present a physically motivated classification method that is based on our understanding of the duration distribution of Collapsars: it has a plateau at durations shorter than a few dozen seconds. Our method allows us to assign a probability for each GRB to be a non-Collapsar. I will show that this probability depends on the detector that observes the GRB and on the hardness of the GRB. Specifically I will show that in Swift GRBs, using the traditional (< 2 sec) definition of short GRBs to select non-Collapsar candidates leads to a high contamination by short duration Collapsars which have the potential of biasing the results.	114	GRBs

Contributed	Capitaniao	inaf	it	IGR J17091-3624: a GRS 1915-105 like source as seen by INTEGRAL and Swift	We present here the principal characteristics of the outbursts of the BHC IGR J17091---3624 that have occurred several times since 1994 and have been extensively observed by INTEGRAL and Swift from 2003 until now. In particular, we focus on the last 2011 outburst that showed a rare variability behaviour observed before only in the galactic BH GRS 1915+105 but at a different level of flux. Several hypotheses have been proposed in order to explain this particular behaviour. They are all discussed here, in the light of their apparent contradiction. Finally, on the base of all these information, we attempt to give an overall view of this enigmatic source and we speculate on the evolutionary state of the binary system.	025	Binaries
Contributed	Chaty	ceasac	fr	An INTEGRAL view of High Mass X-ray Binaries : their nature, formation and evolution	After 10 years of INTEGRAL observations, our knowledge of High Mass X-ray Binaries (HMXBs) has been totally revolutionized thanks to a wealth of multi-wavelength ground and space-based observations, from the high-energy side (INTEGRAL, XMM, Chandra, Swift), to the optical/near-to-mid infrared range (ESO). This INTEGRAL-10 year era has allowed for the discovery of two new populations of HMXBs hosting supergiant stars : one population with intrinsically high absorption, and a second population exhibiting short and intense flares. I will describe new multi-wavelength observations (including VLT and Herschel data) of a large sample of supergiant HMXBs, investigating their nature, and suggesting the existence of an evolutionary link between different categories of HMXBs. These results allow us to discuss the various models of accretion in these sources (e.g. transitory disk vs clumpy wind), and the statistically significant sample of supergiant HMXBs now allows us to study the population as a whole, and compare the observations with population synthesis models.	096	Binaries
Contributed	Cherepashchuk	sten	ru	Peculiarities in the orbital and precessional variability of SS433 from INTEGRAL observations	Based on multiyear INTEGRAL observations of SS433, a composite IBIS/ ISGRI 20-60 keV light curve around zero precession phase $\phi = 0$ (which corresponds to a maximum separation of the moving emission lines originated in sub-relativistic jets from the source) is constructed. It shows a peculiar shape characterized by a significant excess near the orbital phase $\phi = 0.25$ (Fig. 1), which is not seen in the softer 2-10 keV energy band. Such a shape is likely to be due to a complex asymmetric structure of the funnel in a supercritical accretion disk in SS433. There is a tendency of the X-ray spectrum to get harder at $\phi = 0.25$ than at $\phi = 0.75$. The change of the off-eclipse 18-60 keV X-ray flux with the precession phase shows a double-wave form with strong primary maximum at $\phi = 0$ and weak but significant secondary maximum at $\phi = 0.6$ (Fig. 2). A weak variability of the 18-60 keV flux in the middle of the orbital eclipse correlated with the disk precession phase is also observed. Both the eclipsing and precessional variabilities of SS433 in the hard X-rays observed by INTEGRAL are used to constrain physical parameters of the complicated model of this unique galactic supercritical microquasar. Figure 1: Composite IBIS/ISGRI 20-60 keV X-ray eclipse light curve around zero precession phase $\phi = 0$. Figure 2: Precession 18-60 keV light curves of SS433 (off-eclipse, blue crosses and in the middle of eclipses, red crosses).	073	Binaries
Contributed	Chernyakova	dublun	ie	Superorbital modulation of X-ray emission from gamma-ray binary LSI +61 303	We report the discovery of correlated modulation of X-ray and radio emission properties of the gamma-ray binary LSI +61 303 on a superorbital 4.6 year timescale. Using systematic multi-year monitoring of the system by RXTE we show that the orbital phase of X-ray flares from the source varies from $\phi_X \sim 0.35$ to $\phi_X \sim 0.75$ on the superorbital time scale. Simultaneous radio observations show that periodic radio flares always lag the X-ray flare by $\phi_X - R \sim 0.2$. We propose that the constant phase lag corresponds to the time of flight of the high-energy particle filled plasma blobs from inside the binary to the radio emission region at the distance 10 times the binary separation distance. We put forward a hypothesis that the X-ray bursts correspond to the moments of formation of plasma blobs inside the binary system. We also discuss the behaviour of the system at higher energies, as seen by INTEGRAL and Fermi.	005	Binaries
Contributed	Clavel	apc	fr	Recent observations of X-ray emission from Molecular Clouds at Galactic Center related to SgrA* past activity	INTEGRAL, XMM-Newton and Chandra observations of the Galactic Center carried out over the past ten years along with several ground based telescopes have provided significant information on the present and past activity of Sgr A*, the Supermassive Black Hole at the Galactic Center. The current propagation of the neutral iron K-alpha emission line through molecular clouds located in the central region of the Galaxy highlights the recent history of SgrA*. The 2011 and 2012 observation campaigns with Chandra and XMM-Newton carried out by our group reveal fast variations along thin molecular structures in the inner Galactic regions. I will present the results we found in our analysis of these new data and the physical interpretation of these emission variations over time derived in the context of a Sgr A* intense past activity reflection model.	130	diffuse
Contributed	Coleiro	ceas	fr	Distribution of High Mass X-ray Binaries in the Milky Way	INTEGRAL observations of the high energy sky have quadrupled the number of supergiant X-ray Binaries observed within the Galaxy, raising new questions about the formation and evolution of High Mass X-ray Binaries (HMXBs). The number of detected HMXBs of different types is now high enough to allow us to carry out a statistical analysis of their distribution in the Milky Way. For the first time, we accurately derived the distance and absorption of a substantial sample of HMXBs by using a Spectral Energy Distribution fitting procedure, and we examine the correlation with the distribution of Star Forming Complexes (SFCs) in the Galaxy. We will show that HMXBs are clustered with SFCs with a typical cluster size of 0.3 kpc and a characteristic distance between clusters of 1.7 kpc. Furthermore, we will present an investigation of the expected offset between the position of spiral arms and HMXBs, allowing us to constrain age and migration distance due to supernova kick for some sources. These new methods will allow us to assess the influence of the environment on these high energy objects with unprecedented reliability.	017	Binaries

Contributed	Delsanto	inafr	it	Constraining the magnetic field in the X-ray corona of Cyg X-1 with INTEGRAL	We will present six years of INTEGRAL (IBIS, SPI and JEM-X) observations of the BH binary Cygnus X-1. We produced 12 high-quality broad-band spectra (3 keV-1 MeV), representative of the whole range of spectral shapes observed in this source. We have studied the evolution of the physical parameters of the accretion flow across spectral transitions, by using two hybrid thermal/non-thermal Comptonization models. In particular, we used for the first time on Cyg X-1 data, the new model BELM which gives constraints on the magnetic field in the X-ray corona. We find that in the softer states, the magnetic field is at most of the order of 106 G. In the harder states, if the non-thermal excess observed above a few hundred keV is produced in the same region as the bulk of the thermal Comptonization, the upper limit on the magnetic field is about 105 G. On the other hand, this high-energy excess may be produced in the jet (as recently suggested by INTEGRAL polarization measurements): in this case the constraints on the magnetic field in the hard states are somewhat relaxed and the upper limit rises to 107 G.	046	Binaries
Contributed	Diehl	mpe	de	Nucleosynthesis line studies with SPI	Studies based on the gamma-ray lines from radioactive decay of unstable isotopes produced in massive-star and supernova nucleosynthesis have been among INTEGRAL's prominent science achievements. ²⁶ Al has become a tool to study specific source regions, such as massive-star groups and associations in nearby regions which can be discriminated from the galactic-plane background, and the inner Galaxy where Doppler shifted lines add to the astronomical information. ⁶⁰ Fe is co-produced by the sources of ²⁶ Al, and the isotopic ratio from their nucleosynthesis encodes stellar-structure information. Here we report latest results using the accumulated multi-year database of observations, and discuss their astrophysical interpretations.	061	Nucleos
Contributed	Donnarumma	inafr	it	MeV blazars: results and perspectives	Hard X-rays observations are crucial to detect and then study the blazars with steeper gamma-ray spectra. This was confirmed by the results obtained by the current gamma-ray missions (AGILE and Fermi) on this class of objects. We will present the interesting case of the gravitationally lensed blazar PKS 1830-211 which showed an unusual gamma-ray activity in October 2010. The multiwavelength data (SMARTs, Swift, INTEGRAL, AGILE) acquired during the gamma-ray flare showed a peculiar behavior of this class of object which was interpreted in light also of the lensing nature of this object. This challenges the nature of the MeV blazars and of its duty cycle. We will then discuss the importance of the simultaneous hard X-ray and gamma-ray monitoring in order to better estimate their contribution to the Cosmic X-ray background and to the low energy Extragalactic Gamma-ray Background as well. Finally, we will show possible areas of deeper investigations.	090	AGNs
Contributed	Drave	soton	uk	Investigating the nature of Supergiant Fast X-ray Transients using INTEGRAL and XMM Newton	The discovery of the Supergiant Fast X-ray Transient (SFXT) sub-population of High Mass X-ray Binaries (HMXB) has been one of the major scientific results of the INTEGRAL mission. The sensitive hard X-ray observations INTEGRAL has provided over a 10 year long baseline have allowed a good characterisation of many SFXTs through the identification of their outburst histories and accurate determinations of the orbital period of the compact objects in these systems. Such results have been imperative in opening up the field of SFXT study to focusing, soft X-ray observatories such as XMM-Newton. Soft X-ray observations have allowed the detailed characterisation of the X-ray energy spectra, the identification of neutron star pulse periods and the investigation of the outburst generation mechanisms in these extreme systems. Here we combine both of these areas of study and for a selection of SFXTs present new, co-ordinated INTEGRAL and XMM-Newton observations of the periastron regions of these systems. We study the varying environment encountered by the compact objects during the closest approach of their orbits across a broad energy range. Through this study we aim to investigate the accretion processes occurring during periastron passage in SFXTs. We will also use the high quality data to place constraints on both the stellar wind and orbital parameters of the systems as well as searching for new pulse periods. Finally we will place these new observations in the context of their emission histories, as observed by INTEGRAL, and comment on the global nature of SFXTs and their place within the HMXB hierarchy.	028	Binaries
Contributed	Ferrigno	isdc	ch	Discovery and follow-up of new INTEGRAL transients.	The quick look service at the ISDC helped the science community to promptly discover and follow-up several hard X-ray transients in the past few years, thus providing an important tool to exploit the INTEGRAL potential and its synergies with other X-ray facilities. Here we report on the discovery and follow-up campaign of two of these objects, which have been carried out by our group of research. The wide spectral coverage of INTEGRAL combined with the high sensitivity of soft X-ray pointed observations allowed us to perform a first characterization of the new candidate cyclotron line pulsar IGR J18179-1621 and of the peculiar "failed outburst" of the black-hole candidate MAXI J1836-194.	099	Survey
Contributed	Fiocchi / Natalucci	inafr	it	The INTEGRAL Galactic Plane Scanning	The Galactic Plane Scans has been approved as a Key Programme throughout AO8 and AO9 and the programme is still on going. These new observations along the Galactic Plane are providing a more uniform and longer monitoring of the known sources and a possibility to detect new sources. We report on the results of the timing and spectral analysis of the detected transient sources (both known and new) and of the weak persistent sources in high exposure regions, combining new monitoring with archival data.	109	Survey
Contributed	Grebenev	iki	ru	Study of the Large Magellanic Cloud and Supernova 1987A	Results of the long (5 Ms) INTEGRAL observations of the remnant of Supernova 1987A and the whole LMC field during 2010-2012 are reported. We present ultra-deep X- and hard X-ray images of the field, discuss variety of detected X-ray sources, their spectral variability, the discovery of new sources. Statistical properties of the HMXB population in the LMC and the AGN sample seen in this direction are analyzed and compared with those in other galaxies and other directions. Main part of the talk is devoted to the study of SNR1987A and its emission in the direct-escape lines of the radioactive Ti-44.	103	Nucleos
Contributed	Hanlon	dublun	ie	GRB120711A : an exceptional Integral GRB	Not known	162	GRBs

Contributed	Hill	slac	us	4 years of Fermi-LAT observations of gamma-ray binaries: from microquasars to gamma-ray novae	The Large Area Telescope on-board the Fermi Gamma-ray Space Telescope has been surveying the sky above 100 MeV for over 4 years. The high-energy source population is dominated by the variable, flaring AGN and the steady, persistent rotation-powered pulsars. Hidden amidst these sources, is a small population of gamma-ray binary systems. Of the hundreds of known X-ray binaries within our galaxy less than 10 have been identified to emit at energies above 100 MeV. These binaries exhibit a wide range of behaviours and are still not well understood; indeed the nature of the compact object is not known in more than 50% of the systems. We present the latest high-energy Fermi observations of this object class in the context of our current understanding of this mysterious population of natural particle accelerators.	031	Binaries
Contributed	Hurley	berk	us	A Decade of Bursts with the SPI-ACS	The anticoincidence system of the INTEGRAL spectrometer has been an essential component of the interplanetary network since launch. It has observed over 1100 confirmed gamma-ray bursts, about 700 soft gamma repeater bursts, and about 200 events which are unconfirmed, many of which are almost certainly weak bursts below the thresholds of the other IPN experiments. We review the highlights of these observations, which include not only GRBs and SGRs, but also one or two extragalactic giant magnetar flares. We discuss some of the science which is being done with INTEGRAL/IPN bursts.	003	GRBs/transients
Contributed	Kazanas	gsfc	us	Towards a unified AGN structure of accretion powered sources	We present a unified model for the structure and appearance of accretion powered sources across their entire luminosity range from galactic X-ray binaries (XRB) to luminous quasars, with emphasis on AGN and their phenomenology. Central to this model is the notion of MHD winds launched by the accretion disks that power these objects. These winds provide the matter that manifests as blueshifted absorption features in the UV and X-ray spectra of a large fraction of these sources; furthermore, their density distribution in the poloidal plane determines their "appearance" (i.e. the column and velocity structure of these absorption features and the obscuration of the continuum source) as a function of the observer inclination angle (a feature to which INTEGRAL has made significant contributions). This work focuses on just the broadest characteristics of these objects; nonetheless, it provides scaling laws that allow one to reproduce within this model the properties of objects extending in luminosity from luminous quasars to XRBs. Our general conclusion is that the AGN phenomenology can be accounted for in terms of three parameters: The wind mass flux in units of the Eddington value, m_{∞} , the observers' inclination angle and the logarithmic slope between the O/UV and X-ray fluxes α_{OX} ; however because of a correlation between α_{OX} and UV luminosity the number of significant parameters is two. The AGN correlations implied by this model appear to extend to and consistent with the XRB phenomenology, suggesting the presence of a truly unified underlying structure for accretion powered sources.	131	AGN
Contributed	Klein	obpm	fr	Solar energetic particles – combining direct measurements with remote sensing observations	The Sun accelerates charged particles to high, sometimes relativistic energies, on time scales of seconds or less. How and where this occurs is still a subject of debate. Energetic solar events, flares and coronal mass ejections (CMEs), are associated with all major solar particle events, and offer basically two scenarios of acceleration : magnetic reconnection in the flaring active region and in the aftermath of a CME, and the large-scale coronal and interplanetary shock wave driven by fast CMEs. In this contribution an analysis is presented combining remote sensing (hard X-rays using INTEGRAL and RHESSI, radio spectrography and imaging) with in situ measurements of energetic protons and electrons in space. We show the results of detailed modelling of the interplanetary transport of energetic electrons during an event and discuss how the inferred electron release at the Sun compares with the hard X-ray and radio emission of electrons observed in the solar atmosphere and with the release of energetic protons to space. Then an overview on similar observations during the solar energetic particle events of the last solar activity cycle (1997-2006) is given, including the comparison of the early release of energetic protons at the Sun with the electromagnetic emissions. This work is part of the SEPServer project, which is constructing a database of solar energetic particle events comprising in situ particle measurements and electromagnetic emissions of energetic particles in the solar atmosphere.	082	Sun
Contributed	Klochkov	tueb	de	Probing the configuration of the emitting structure in accreting pulsars using luminosity-related spectral changes	Luminosity-related spectral changes are a common property of accreting pulsars. Especially interesting are variations of the cyclotron absorption line, whose centroid energy is proportional to the magnetic field strength at the emitting structure above the neutron star's polar caps. We performed a systematic study of the spectrum-luminosity dependences based on the new and archival X-ray data taken with INTEGRAL and RXTE on a sample of bright accreting pulsars (both our own analysis and previously reported observations). Our results indicate the presence of two distinct types of spectral variations with flux. Accreting pulsars with luminosities above $\approx 10^{37}$ erg/s show a softening of their spectral continuum and a decrease of the cyclotron line energy with flux. In the sources whose luminosity stays below or around $\approx 10^{37}$ erg/s an opposite behavior is observed. Our analysis shows that the spectrum-luminosity dependence of a particular pulsar is mostly the same on the long time scale (days to years) and on the time scale of individual pulsations. The two types of behavior most probably reflect two different regimes of accretion (i.e. two different configurations of the X-ray emitting accretion column/mound) which are realized in a source depending on whether its X-ray luminosity is above or below a critical value of about $\approx 10^{37}$ erg/s.	083	Binaries

Contributed	Koljonen	mets	il	The multiwavelength spectral and timing properties of a major radio flare episode in Cygnus X-3	Cygnus X-3 exhibits major radio flares/jet ejection events like no other microquasar with radio flux densities up to 20 Jy. During these major flares Cygnus X-3 displays a variety of phenomena across the electromagnetic spectrum, including unique temporal properties such as gamma-ray flares observed before the onset of major radio flares when the source is in a special radio/X-ray state and quasi-periodic oscillations observed during the major flare decay. Here we present our attempt to form a unified picture of the nature of these jet ejection events through studies of joint spectral and timing X-ray data from INTEGRAL, RXTE and Swift during major flares and modeling the spectral energy distribution from the radio through to the X-rays/ gamma-rays.	039	Binaries
Contributed	Koyama	kyotou	jp	Structure and Dynamics of the Galactic X-rays	I show global structures of the fluxes of K-shell lines of Fe and S and the continuum band in the Galactic center (GC) X-ray emission (GCXE) and the Galactic ridge X-ray emission (GRXE). The spectra of GCXE and GRXE comprise two plasma components; Low Temperature Plasma (LP) of ~1 keV and High Temperature Plasma (HP) of ~7 keV. The temperatures and flux ratios of LP and HP are different between GCXE and GRXE. The scale height of HP is smaller than those of LP in both the GCXE and GRXE. The scale high of neutral iron line is even smaller. These phenomena are in contrast to larger scale height of the Galactic Ride hard X-ray emission (the 17–60 keV band, by Integral). The K-shell lines from neutral atoms are clumpy and time variable, as well as the Integral hard X-ray emission, which are well explained by the X-ray reflection nebula (XRN) scenario irradiated by past flares of Sgr A*. The GCXE plasma would be largely affected by this activity, and hence the plasma would be still dynamical and transient (ionizing or recombining plasma) phase, like out flow and/or jets. This paper also shows some hints on this transient nature.	148	diffuse
Contributed	Kretschmar	esac	es	The Be X-ray Binary Outburst Zoo	Be X-ray binaries are among the best known transient high-energy sources. Their outbursts are commonly classified into a simple scheme of 'normal' and 'giant' outbursts, but a closer look shows that actual outbursts do not always follow this simple scheme. Recent data show a variety of properties, like pre-flares, shifts of the outburst peaks with respect to the periastron, multi-peaked outbursts etc. We present results from a systematic study of a large number of outbursts monitored by various space missions, comparing outburst properties and their relation to system parameters and current theoretical understanding.	081	Binaries
Contributed	Kretschmer	mpe	de	Velocities of 26Al in the inner Galaxy	The energy resolution of SPI allows spatially resolved radial velocity measurements on emission lines from radioactive decays in the interstellar medium. We determine the radial velocity of 26Al produced by massive stars in the inner Galaxy and its dependence on Galactic longitude. We discuss the implications of our measurement on determining the location of recent massive star formation activity in the inner part of the Milky Way.	064	Nucleos
Contributed	Kühnel	erla	de	GRO J1008 57: a laboratory for accretion physics	We present preliminary results of the spectral analysis of the onset of an outburst of GRO J1008??57 in 2011. Furthermore, we show the spectral evolution of the decay phases of the 2005 and 2007 outbursts. Performing a detailed timing analysis we improved the orbital solution of the system. The transient high mass X-ray binary GRO J1008??57 was discovered by CGRO in 1993. It consists of a 93.7 s neutron star pulsar in a wide eccentric orbit around a Be type companion. To date, the orbital parameters of GRO J1008??57 are mostly quite uncertain. By analyzing RXTE, Swift and Suzaku data of outbursts in 2005 and 2007, we improved the orbital period of the system to 249.46 d and calculated the time of the periastron passage of the 2007 outburst. In contrast to other transient Xray sources, the outbursts of GRO J1008??57 are predictable with high accuracy. This makes this source an ideal target for studying accretion physics at di erent outburst phases. The spectrum of GRO J1008??57 during an outburst can be well described by a cuto powerlaw with an additional black body at energies below 10 keV. We also nd evidence for a source intrinsic iron line at 6.4 keV. During the decay of the outbursts the spectrum softens signi cantly. The black body temperature and the iron line flux are correlated with the X-ray luminosity. We also detected strong galactic ridge X-ray emission in the RXTE-PCA data, which has to be taken into account during the spectral analysis of the source.	078	Binaries
Contributed	Kuiper	sron	nl	Linking the soft gamma-ray pulsar population with the Fermi LAT pulsar population: completing the high-energy picture	While at high-energy gamma-rays (>100 MeV) the Fermi LAT already detected more than 120 pulsars, the number of pulsars seen at soft gamma-rays (20 keV - 30 MeV) is still very limited, though steadily growing. Namely, in recent years targeted deep radio and/or X-ray observations of HESS (TeV) and newly discovered INTEGRAL sources revealed the presence of young and energetic pulsars, surrounded by bright pulsar wind nebulae (PWN). Currently, the total number of detected soft gamma-ray pulsars counts 18 members, including new candidates. The average characteristics of these soft gamma-ray pulsars differ from those of the LAT detected pulsars, e.g. the Fermi LAT pulsar population typically reaches its peak luminosity at GeV energies, the soft gamma-ray pulsar population does so at MeV energies. In this presentation I will discuss the characteristics of this soft gamma-ray pulsar population (with new/updated INTEGRAL timing results on the Vela pulsar covering AO-1 -- 9) in comparison with the Fermi LAT findings in order to obtain a complete high-energy picture of the pulsar population.	058	SNR/pulsars/polar
Contributed	Kuulkers	esac	es	The Galactic bulge as a Christmas tree: results from almost 10 years of INTEGRAL monitoring	The central region of our Milky Way, the Galactic bulge, is a rich host of variable high-energy X-ray and gamma-ray point sources. These sources include bright and relatively faint Xray transients, X-ray bursters, persistent neutron star and black-hole candidate binaries, high-mass X-ray binaries, etc.. Since 2005 INTEGRAL monitors the Galactic bulge region regularly and frequently, whenever it is observable. As a service to the scientific community the high-energy light curves of sources in the field of view, as well as the images of the region are made available through the WWW at http://integral.esac.esa.int/BULGE/ as soon as possible after the observations have been performed. Moreover, the data are made publicly immediately. We show the ongoing results of this exciting program, and focus on the transient population. Since the bulge never looks the same, it stays a region to be watched.	089	Survey

Contributed	Lutovinov	iki	ru	Population of high mass binaries in the Milky Way. INTEGRAL legacy Survey	Review the latest results of the Galactic plane survey, made with the help of 10 years of observations of INTEGRAL is presented. The deep exposure spent by INTEGRAL in the sky region with $ l < 100$ deg and $ b < 5$ deg allow us to detect any source with the flux $F_X(17-60 \text{ keV}) = 0.6 \text{ mCrab}$ and to obtain a flux limited sample of high-mass X-ray binaries in our Galaxy. We have succeeded to obtain a luminosity function of these sources in an uniquely wide luminosity interval. General properties of the population of HMXBs are explained in the framework of the population synthesis approach. We discuss relations between different subclasses of HMXBs (e.g. persistent sources, so-called Supergiant Fast X-ray Transients etc) and relate them to different modes of the wind-fed accretion. We are able to determine the most accurate up to date volume density distribution of sources in the Galaxy and connect it to the history of the star formation. The obtained dependence allow us to predict a total number of HMXBs in the Galaxy and, taking into account a hardness diagram for different types of X-ray sources, to make a suggestion about a nature of several dozens of non-identified sources in the survey. The resulted global characteristics of the HMXB population in the Galaxy can be used for predictions of sources number counts in sky surveys of future X-ray missions like NuSTAR or Spectrum-XG	141	Binaries
Contributed	Malizia	inafb	it	The INTEGRAL view of the Extragalactic Sky	After ten years of operation, INTEGRAL has scanned a great fraction of the sky and these observations form an all-sky survey at high energies. This data set represents a powerful tool for both Galactic and extragalactic population studies. We have made a census of all the AGN detected by INTEGRAL/IBIS in the 20-100 keV band, the sample contains around 300 AGN and apart from the classical Seyfert 1 and 2 galaxies some atypical classes, such as XBONG, LINERS and a few high redshift QSOs, are starting to emerge. In particular, we find objects with unusual absorption properties such as highly absorbed sources optically classified as type 1 Seyferts, and unabsorbed type 2 objects; these cases will be analyzed and these peculiarities will be discussed. The absorption distribution together with the fraction of Compton thick sources in this high energy selected extragalactic sample will be discussed both in the framework of the AGN Unified Theory and in its implication on the cosmic diffuse X-ray background model.	118	AGNs
Contributed	Marandon	apc	fr	Recent news from H.E.S.S. galactic plane	Since 2004, the H.E.S.S. array of Cherenkov telescopes, operating in the TeV range, has continuously observed the inner regions of the galactic plane. Thanks to its high sensitivity, this instrument has lead to the discovery of a large number of VHE gamma-rays sources, the major part of which are pulsar wind nebulae and supernova remnants. Nonetheless, a significant fraction of the H.E.S.S. sources in the Galactic Plane remain unidentified and require deeper multi-wavelength observations to reveal their nature. The recently opened TeV window gives a different point of view on the particle population released by the astrophysical sources. When combined with the observation from other instruments, such as INTEGRAL, one can probe the history and physical conditions of the different sources, leading to a better understanding of our Galaxy at high energies. The latest results from the H.E.S.S. Galactic Plane Survey will be presented, and emphasis will be put on the latest discoveries which might be of interest for the soft gamma ray community.	140	diffuse
Contributed	Marcowith	mont	fr	Stochastic acceleration in accreting black holes	The hard X-ray emission of accreting black holes is thought to originate very close to the central compact object, in a corona, or at the base of the jet. It results from the acceleration of high-energy particles, i.e. for instance in X-ray binaries, leptons from about 10 keV to several MeV. The physical mechanism accelerating leptons to such high energies is still uncertain and debated. Whether it is based on collisions with hot protons, magnetic reconnection, shock acceleration or 2nd order Fermi process, very little work has been done so far to model the microphysics of acceleration in black hole systems and to test it against observations. We present a model based on second order Fermi acceleration in high-energy plasmas. The process results from the resonant interaction of particles with plasma waves. To investigate its properties and efficiency we have solved numerically for the very first time the complete evolution of a hot gas constituted by several species: protons, leptons, photons and magnetohydrodynamic waves interacting with each others through radiative processes, Coulomb collisions, and resonant wave-particle interactions. We find that the temperature of protons controls stochastic lepton acceleration. In conditions that prevail in the corona of X-ray binaries, it can be very efficient in accelerating leptons and producing hard X-ray emission. Finally, the spectral states of X-ray binaries can be reproduced accurately using this first self-consistent modeling of an acceleration mechanism.	009	Binaries
Contributed	Martin	dublun	ie	The prompt and early afterglow emission of GRBs observed by INTEGRAL	Despite being a general observatory, and not a GRB oriented mission INTEGRAL has contributed to several important discoveries in the GRB field. This has been obtained thanks to its unprecedented localization capabilities, and sensitivity in the soft gamma-ray domain, I will review the main results obtained during the last 10 years with and thanks to INTEGRAL, including the discovery of one of the few GRBs spectroscopically associated with a Supernova, the first measurement of variable polarization in the GRB prompt emission, the indication of the existence of a low-luminosity population of GRBs, as well as the recent application of GRBs as probes for the fundamental physics. I will finally summarize the main spectral characteristics of the INTEGRAL sample, and make the point on the lessons learnt from INTEGRAL in the perspective of designing future GRB dedicated missions.	122	GRBs
Contributed	Martinez	alic	es	The structure of hot-star winds revealed through XMM-Newton observations of Vela X-1	We present orbital-phase-resolved analysis of a continuous 34-hour observation with XMM-Newton of the prototypical wind accretor Vela X-1 that covered eclipse egress from phase 0.134 to phase 0.265 during which a huge flare took place. We model separately several contributions to the observed spectrum: a direct component from the neutron star; a scattered component from the wind; and a soft component. We analyse the variations of these components as well as the variations in the Fe K fluorescence lines and provide an interpretation within the current stellar wind theory of massive stars.	014	Binaries

Contributed	Mereghetti	inafm	it	Flares and outbursts from magnetars observed by INTEGRAL	Magnetars, young isolated neutron stars with external magnetic fields of 10 ¹³ -10 ¹⁵ G, are among the most powerful and spectacular high-energy transients in the sky. They can emit highly super Eddington short bursts, often grouped in time periods of enhanced activity, and less frequent intermediate and giant flares with luminosity up to 10 ⁴⁷ erg/s. Magnetars differ from other more common classes of neutron stars because all their emission is powered by the gradual and/or impulsive dissipation of magnetic energy, rather than by rotational energy or accretion. There is evidence that the field in the interior of magnetars can exceed 10 ¹⁷ G, probably as a result of their rapid rotation at birth (1–2 ms). Different episodes of bursting/flaring activity from magnetars have been observed by INTEGRAL, from the ordinary short bursts characterizing the Soft Gamma-ray Repeaters to the giant flare of December 2004, the brightest ever recorded. Several of these events have been promptly announced and triggered follow-up observations at different wavelengths. I will review some of these observations and discuss the results in the light of the most recent developments of the magnetar model.	063	SNR/pulsars/polar
Contributed	Moran	galw	ie	INTEGRAL/IBIS and optical observations of the Crab nebula/pulsar polarisation	Previous Integral/Ibis observations have shown that the gamma-ray radiation of the nebula is highly polarised and remarkably aligned along the axis of rotation of the pulsar (Forot et al, 2008). Their study was based on the first four years of operation of the satellite. Here shall present an analysis based upon nearly ten years of operation. This new analysis allowed a better characterisation of the polarisation components (angle and degree), as well as a measure of spectral energy distribution of the polarised component. These results are then compared to the known optical polarisation of the pulsar and nearby synchrotron knot. In the future we shall compare the gamma-ray polarisation with the phase resolved optical polarisation using instruments such as GASP - Galway Astronomical Stokes Polarimeter (Kyne et al, 2010).	072	SNR/pulsar/polar
Contributed	Müller	erla	de	Boon and bane of studying the multiple cyclotron source 4U 0115+63	We present the results of the spectral analysis of the 2008 outburst of the high mass X-ray binary 4U 0115+63, recorded by INTEGRAL and RXTE. With five cyclotron resonance scattering features, this source is the X-ray pulsar with the highest number of detected cyclotron lines, making this system an outstanding laboratory to study the physics and geometries of accreting X-ray pulsars. For example the flux dependence of the centroid cyclotron line energies provides information about the accretion dynamics and underlying physical processes within the accretion columns. Many authors have studied the cyclotron features in 4U 0115+63. The centroid energy of the fundamental cyclotron resonance scattering feature of this source has been claimed to be anti-correlated with the X-ray flux. Our investigation, however, reveals a strong dependence of the cyclotron line behaviour on the choice of the broadband X-ray continuum model, i.e., using an alternative model, the cyclotron centroid energy is no longer flux dependent. The alternative model and its implications on the cyclotron line behavior are, in contrast to previously published results, highly self consistent. These new results come along with strong impacts on the theoretical understanding of accreting X-ray pulsars. The question whether in 4U 0115+63 a radiation dominated shock has been formed is affected by this result as well as the fundamental physics of the accretion mechanisms of highly magnetized neutron stars. Furthermore, 4U 0115+63 is perfectly suited to probe newly developed physical models, unifying the broadband continuum and the shape of the cyclotron features.	077	Binaries
Contributed	Nespoli	esac	es	Spectral states in Be/X-ray pulsars	In the last quarter of a century, a unified characterization of the spectral evolution of low-mass X-ray binaries, both containing a neutron star and a black hole, was made. In this context, the discovery of source states in the X-ray emission of black-hole binaries and neutron-star low-mass X-ray binaries constituted a major step forward in the understanding of the physics of accretion onto compact objects. While there are numerous studies on the correlated timing and spectral variability of these systems, very little work has been done on high-mass X-ray binaries, the third major type of X-ray binaries. Accretion-powered pulsars with Be companions represent the most numerous class of high-mass X-ray binaries. When active, they are amongst the brightest extra-solar objects in the X-ray sky and are characterized by dramatic variability in brightness on timescales of days. We investigate whether accreting X-ray pulsars display source states and characterize those states through their spectral and timing properties. Our work shows that Be/X-ray pulsars trace two different branches in the hardness-intensity diagram: the horizontal branch corresponds to a low-intensity state of the source and it is characterized by fast color and spectral changes and high X-ray variability. The diagonal branch is a high-intensity state that emerges when the X-ray luminosity exceeds a critical limit. In some sources, a significant correlation between spectral and timing parameters is seen, implying interplay between the accretion column and the inner accretion disk. The two branches may reflect two different accretion modes - in agreement with recent phenomenological models - depending on whether the luminosity of the source is above or below a critical value. This critical luminosity is mainly determined by the magnetic field strength, hence it differs for different sources. For the sample of nine systems analyzed in this work, the critical luminosity lies in the range 0.1-0.3 of Eddington luminosity.	042	Binaries
Contributed	Panessa	inafr	it	The X-ray versus Radio correlation in a sample of INTEGRAL AGN	The accretion-ejection mechanism acting in Active Galactic Nuclei (AGN) is one of the main astrophysical open issues, being connected to the role of AGN feedback in galaxy formation evolution studies. The X-ray emission in AGN, associated with the accretion flow, is strongly coupled with the radio emission, associated with a jet. Strong correlations between the X-ray and the radio luminosities are found both in radio-loud (RL) and in radio-quiet (RQ) AGN, despite the fact that in RQ AGN jets are often absent or very weak. For a well defined and complete INTEGRAL RQ AGN sample we have found a strong correlation between the 20-100 keV and the radio luminosity. Black hole mass estimates for half of the sample sources allow us to compute the "fundamental plane of black hole activity", sampling the high luminosity/high accretion rate parameter space. We will discuss the possible accretion-ejection physical scenarios which predict the observed correlations and compare these results with those obtained for a low luminosity AGN sample.	071	AGNs

Contributed	Petrucci	laog	fr	Multiwavelength campaign on Mrk 509: testing realistic comptonization models	The origin of the different spectral components present in the high energy (UV to X rays/gamma rays) spectra of Seyfert galaxies is still highly debated. One of the major limitations, in this respect, is the lack of really simultaneous broad band observations that allow us to disentangle the behavior of each component and to better constrain their inter connections. The 1 month monitoring (10 observations, 1 every 4 days, in October/November 2009) of the Seyfert 1 galaxy Mkn 509 simultaneously with XMM and INTEGRAL provide a unique opportunity to test simultaneous UV to X rays/gamma rays data against physically motivated broad band models. Each observation has been fitted with a realistic thermal comptonisation model for the primary continuum. In agreement with the observed UV/Soft X ray correlation, we use a thermal comptonisation component for the soft X ray excess. We also include a warm absorber and a reflection component, as required by the precise studies done by our consortium. The UV to X/gamma rays emission of Mkn509 is well fitted by these components and agrees with 1) a very hot optically thin ($kT \sim 100$ keV, $\tau \sim 0.5$) plasma for the primary continuum, and located in the inner accretion flow, and 2) a warm optically thick ($kT \sim 1$ keV, $\tau \sim 10-20$) plasma for the soft X rays, that could be associated with the warm upper layer of the outer accretion disc. We will discuss the direct constraints (size, location, variability origin) on and the interconnection between these different emitting regions.	019	AGNs
Contributed	Postnov	ster	ru	Quasi-spherical accretion in low-luminosity X-ray pulsars: Theory vs observations	Quasi-spherical accretion onto slowly rotating X-ray pulsars with moderate and small X-ray luminosities $L_x \sim 4 \times 10^{36}$ erg/s is discussed (e.g. Vela X-1, GX 301-2, GX 1+4, X Per, etc.). At these X-ray luminosities, the captured wind matter heated in a bow shock near the Bondi radius may have no time to cool down via Compton cooling, the mass fall rate is subsonic, and a hot quasi-spherical shell must be formed above the NS magnetosphere (Davies & Pringle 1981). The velocity of matter settling through the shell is determined by the ability of plasma to enter the NS magnetosphere via instabilities, and the extended quasi-static shell mediates the angular momentum removal from the rotating NS magnetosphere by large-scale convective motions (Shakura et al. 2012). The mass accretion rate onto NS is determined by the density above the magnetosphere and the mean settling velocity of matter through the shell, and can be very small if plasma cooling above the magnetosphere is inefficient. The model of quasi-spherical settling accretion is based on generic properties of wind accretion onto magnetized NSs with moderate and low X-ray luminosities, and can be applied to a variety of sources. It describes the observed properties of slowly rotating X-ray pulsars Vela X-1 and GX 301-2 in high-mass X-ray binaries, which spin at an equilibrium period, and of the steadily spinning-down X-ray pulsar GX 1+4 in a symbiotic X-ray binary, in which negative spin-down-luminosity correlations are observed (González-Galán et al. 2012). The model explains the observed spin-luminosity correlations in slowly rotating low-luminosity X-ray pulsar X Per in the Be/X-ray binary (Lutovinov et al 2012), the observed long NS period in Be/X-ray binary SXP 1062 (Popov & Turolla 2012), as well as is used in population synthesis studies (Chashkina & Popov 2012, Lue et al 2012). We show that under the same external conditions in the wind, which largely determine the plasma density distribution in the quasispherical hot shell, accretion through the shell can occur in two distinct modes depending on the characteristic cooling time of the plasma above the Alfvén surface: the Compton (shorter) and radiative (longer) one. The plasma cooling time t_{cool} determines the mean velocity of matter falling through the transition zone. In this zone, the Rayleigh-Taylor instability, which allows plasma to enter the magnetosphere, develops. This velocity is inversely proportional to the plasma cooling time, $u \propto t_{cool}^{-1/3}$, and eventually determines the mass accretion rate through magnetosphere \dot{M} . Therefore, in the same source higher luminosity (Compton cooling dominated) and lower luminosity (radiative cooling dominated) states are possible. The transition from the higher luminosity to lower luminosity state can be related to a sudden decrease in X-ray photon energy density in the equatorial region of the magnetosphere, which is most favourable for plasma enter due to Rayleigh-Taylor instability. Such a decrease may be the result of a change in the X-ray beam pattern from the accretion column (or 'mound' above the polar cap) when the X-ray luminosity drops below some critical value a few $\times 10^{35}$ erg/s determining the opacity of the column relative to Thomson scattering of X-ray photons. Below this luminosity most of the X-ray emission escapes in a pencil beam, so most of the X-ray photons illuminate the magnetospheric cusp region, which is stable for plasma entering the magnetosphere. However, the plasma cooling continues on the longer radiative cooling time scale, which is determined only by the density and temperature above the magnetosphere, and the source switches into the lower luminosity state. Oppositely, an increase in photon energy density in the equatorial magnetospheric region can return the source to the higher luminosity state. We identify these states with 'normal' (higher luminosity) and 'off' (lower luminosity) states observed in Vela X-1 (Kreykenbohm et al 2008, Doroshenko et al 2011), GX 301-2 and some other X-ray pulsars (e.g. 4U1907+05). It is not excluded that the phenomenon of Supergiant Fast X-ray Transients (SFXTs) can also be related to different regimes of plasma cooling in the quasi-spherical shells around slowly rotating magnetized neutron stars, i.e. the quiescent states of SFXTs with stable low-luminosity accretion with $L_{rad} \sim 10^{34}$ erg/s	034	Binaries
Contributed	Pozanenko	iki	ru	Model of the extended emission of short gamma-ray bursts	The existence of extended emission (EE) is an intriguing property of short-duration gamma-ray bursts, because the nature of the EE is still unclear. It might be a rising X-ray afterglow, or it could be a manifestation of the prolonged activity of a central engine. We consider short duration gamma-ray bursts, emphasizing the common properties of both short bursts and short bursts with EE. Assuming that the EE with broad dynamic range is a common property of short bursts, we propose a two jet model which can describe both short main episode of hard spectra emission, specific for short bursts, and softer spectra EE by different θ axis position of observer. The model involves a short-duration jet, which is powered by heating due to e^+e^- annihilation, and a long-lived Blandford-Znajek (BZ) jet with a significantly narrow opening angle. We also compare number density of EE intensity of short bursts with angular dependence of BZ-jet energy release to restrict parameters of BZ-jet.	112	GRBs

Contributed	Renaud	mont	fr	INTEGRAL/IBIS-ISGRI observations of young supernova remnants : Survey in hard X-rays and 44Ti gamma-ray lines	Supernovae and their remnants are the main Galactic nucleosynthesis sites and the privileged sources of Galactic cosmic-rays. The youngest of such remnants can be studied through two distinct observational features : 44Ti gamma-ray lines and the hard X-ray nonthermal continuum emission. The former gives unique information on the nucleosynthesis conditions occurring during the first stages of the explosion, while the latter provides clues on acceleration processes at supernova remnant shocks. In this contribution, INTEGRAL/IBIS-ISGRI data analyses from the first nine years of observations in the two low-energy 44Ti lines and in the hard X-ray continuum will be presented. Results from the search for previously unknown young SNRs, and studies of the youngest SNRs will be discussed.	035	SNR/Nucleos
Contributed	Rodriguez	ceas	fr	Follow-up observations of INTEGRAL sources: an X-ray focus on IGR sources	INTEGRAL, through dedicated programs and scans, has permitted the discovery of tens of new hard X-ray sources (the so-called 'IGR' sources). Although the spatial resolution of the IBIS imager on-board is unrivaled at energies 20-200 keV, it is still not precise enough to pinpoint counterparts at longer wavelengths, and, therefore identify the nature of new sources. Since the discovery of the first of these IGR (IGR J16318-4848) back in 2003, our team has conducted X-ray follow-up programs with all flying X-ray instruments (XMM-Newton, Chandra, Swift, RXTE, and Suzaku). I will present some of the results obtained through these various programs, starting with the identification processes. I will then present finer analysis of some of these sources (e.g. IGR J16393-4643, J18462-0223, J19140+0951, ...) for which our programs allowed physical properties to be unveiled.	133	Survey
Contributed	Sabatini	inaf	it	Gamma-ray monitoring of Galactic Microquasar	AGILE carried out an extensive survey of the Galactic Plane since July 2007. Several microquasars have been monitored, showing that gamma-ray emission is in general rare or not detectable by current gamma-ray telescopes. Flaring activity in gamma-rays is also poor and not related to hard X-ray outburst in general. On the other hand we will discuss the cases of Cygnus X-3 and Cygnus X-1: the former showing a clear evidence of gamma-ray flaring emission correlated to major spectral transitions, the latter having a more puzzling behaviour. The gamma-ray activity will be put in context with multi-wavelength behaviour and interpreted in terms of spectral emission models. Fast transient activity will be discussed also in view of the next generation of gamma-ray instruments.	088	Binaries
Contributed	Savchenko	isdc	ch	Timing properties of gamma-ray bursts detected by SPI-ACS detector onboard of INTEGRAL	We study timing properties of a large sample of gamma-ray bursts (GRB) detected by the Anti-Coincidence Shield (ACS) of the SPI spectrometer of INTEGRAL telescope. We identify GRB-like events in the SPI-ACS data. The data set under investigation is the history of count rate of the SPI-ACS detector recorded with a binning of 50 ms over the time span of 10 yr. In spite of the fact that SPIACS does not have imaging capability, it provides high statistics signal for each GRB event, because of its large effective area. We classify all isolated excesses in the SPI-ACS count rate into three types: short spikes produced by cosmic rays, GRBs and Solar flare induced events. We find some 1500 GRB-like events in the 10 yr exposure. A significant fraction of the GRB-like events identified in SPIACS occur in coincidence with triggers of other gamma-ray telescopes and could be considered as confirmed GRBs. We study the distribution of durations of the GRBs detected by SPI-ACS and find that the peak of the distribution of long GRBs is at 20 s, i.e. somewhat shorter than for the long GRBs detected by BATSE. Contrary to the BATSE observation, the population of short GRBs does not have any characteristic timescale. Instead, the distribution of durations extends as a powerlaw to the shortest timescale accessible for SPI-ACS, 50 ms. We also find that a large fraction of long GRBs has a characteristic variability timescale of the order of 1 s. We discuss the possible origin of this timescale.	047	GRBs
Contributed	Sazonov	iki	ru	Hard X-ray properties of ultraluminous X-ray sources	The nature of ULXs remains unclear. We are not sure if they host stellar or intermediate mass black holes, nor do we have a clear understanding of the accretion process. We shall discuss stringent spectral constraints provided by ongoing long INTEGRAL-XMM observations of two ULXs, M82 X-1 and Ho IX X-1. We shall also discuss the hard X-ray properties of the low-luminosity AGN M81, observed in the same field.	020	Survey
Contributed	Servillat	ceas	fr	DASCH 100-yr light curves of high mass X-ray binaries	The Digital Access to a Sky Century at Harvard (DASCH) is a project to digitize and analyze the scientific data contained in the 530 000 Harvard College Observatory plates taken between the 1880s and 1990s, which is a unique resource for studying temporal variations in the universe on 10-100 yr timescales. I will present the long term light curves of the 4 high mass X-ray binaries covered by the current DASCH data (about 10% of the plates are now scanned in specific fields). The supergiant star in Cygnus X-1 appears to be constant in flux over 100 yr, while another object similar to gamma Cas, the B0.5IIIve star SAO 49275, shows significant slow variability of 1 magnitude on time scales 10-50 years. This variability might be linked to the formation and disappearance of the accretion disk of the Be star, or to the presence of a compact object companion, possibly a white dwarf. DASCH will open a new window in the time domain astronomy which is promising for the study of high mass X-ray binaries.	101	Binaries
Contributed	Skinner	mpe	de	The 511 keV sky as seen by INTEGRAL/SPI, CGRO-OSSE and GRS/SMM combined	Over more than 30 years three space-borne spectrometers have accumulated a wealth of data on the angular and spectral distribution of the 511 keV Galactic e-/e+ annihilation radiation : GRS on the Solar Maximum Mission monitored the 511 keV line from the Galactic Center region in the eighties, the first maps of the inner Galaxy were produced by OSSE/CGRO in the nineties, and since 2002 SPI/INTEGRAL has been performing high resolution imaging spectroscopy over the entire sky. Until now our understanding of the 511 keV emission, and hence of the origin of the Galactic positrons, has been largely based on the analysis of the data-sets independently. We present an analysis of the combined data, constraining the spatial distributions of the galactic e-/e+ annihilation radiation by fitting the same models to the three data sets, and discuss how the spatial distribution constrains the potential source(s) of galactic positrons.	170	Nucleos

Contributed	Soldi	ceas	fr	AGN variability at hard X-rays	The global variability properties of AGN in the highest energy X-rays have been poorly studied up to now. Swift/BAT offers the unique opportunity to observe a large number of AGN on different time scales in the hard X-ray band above 15 keV. An early study using the first 9 months of Swift observations has indicated that the more absorbed type 2 AGN seem to be more variable than the less absorbed ones. We selected a sub-sample of 100 bright AGN from the 58-month BAT survey and studied their variability properties as a function of AGN class, on different time scales and in several energy bands. We find larger variability at lower hard X-ray energies for the Seyfert galaxies. On average, the type 2 AGN are more variable than type 1 objects and this difference cannot be accounted for simply by a variable absorber. We do not find any significant correlation between the amplitude of the variations and the basic AGN parameters, such as the hard X-ray luminosity, the black hole mass and the Eddington ratio, while harder sources are found to be more variable than objects with softer hard X-ray spectra. Comparing our results with observations at energies below 10 keV for Seyfert galaxies, we find significant differences, some likely driven by the different time scales that are probed by the current works in these energy bands, and other (e.g. the lack of anti-correlation between variability and black hole mass) possibly suggesting a different physical origin of the variability below and above 10 keV.	022	AGNs
Contributed	Tarana	inafr	it	High energy characteristics of Neutron star low mass X-ray binaries as seen by INTEGRAL	During the past years, we have been monitoring, mainly with INTEGRAL, a sample of persistent and variable Neutron Star Low Mass Binaries, X-ray Bursters and Atoll type. We studied the long-time X-ray behavior and the spectral states physical characteristics dominating the spectral changes, up to 200-300 keV. Then, comparing sources results allowed to confirm wide variability inside this class of objects as well as different characteristics within the same source. A good test case of this last issue is represented by 4U 1722-30 during its peculiar 2008 outburst.	124	Binaries
Contributed	Tramacere	isdc	ch	A panchromatic view of blazars: constraining acceleration and emission processes in relativistic jets.	We present a blazar phenomenological population study, based on a state-of-the-art sample of a multi-wavelength data set of simultaneous and quasi-simultaneous spectral energy distributions (SEDs), ranging from the radio up to gamma-ray energies. We start from a log-log polynomial fit of the SEDs. From this first step, we constrain the parameter space of the synchrotron self-Compton (SSC) and external Compton (EC) scenario. This step allows us to break some of the degeneracy among the model parameters, such as that between the beaming factor and magnetic field intensity. Then, basing on the phenomenologically constrained parameters, we fit the SEDs by means of an accurate numerical code. Due to the large size of our sample, both the two fitting steps, have been automated, developing very accurate algorithms, able to identify the various component in the observed SEDs. Finally we derive the population properties of the different classes of objects in our sample, namely Flat Spectrum Radio Quasars (FSRQs) and BL Lacs. We investigate the shape of the emitting electron distributions, comparing our results to self-consistent time-dependent analysis, performed in the framework of the stochastic acceleration scenario. We focus also on the Compton dominance, and its relation to the accelerative and radiative processes. Finally we investigate the jets energetics.	055	AGNs
Contributed	Türler	isdc	ch	Spectrum of the cosmic X-ray background from new INTEGRAL Earth observations	We present preliminary results of the analysis of the four new INTEGRAL Earth-occultation observations performed in May, August and September 2012. These special observations repeat the strategy of the successful campaign of 2006 to derive the flux of the cosmic X-ray background (CXB) through occultation by the Earth, exceptionally allowed to pass through the field of view of INTEGRAL. They are the first of a new series of observations with the aim to reduce both the statistical and the systematic uncertainties on the determination of the CXB spectrum. Systematics are reduced by benefiting from the current solar maximum implying a reduced Earth emission due to cosmic-ray interactions in the atmosphere and from a cleaner background field exempt of bright point sources and of the Galactic ridge. We present a detailed analysis of the JEM-X, IBIS/ISGRI and SPI detector light-curves allowing us to derive the spectrum of the CXB at energies between about 5 to 100 keV.	062	AGNs
Contributed	Walter	isdc	ch	CONSTRAINING NEUTRON STAR MASSES FROM HYDRODYNAMIC SIMULATIONS OF OBSCURED HMXB	INTEGRAL observations of persistent high-mass X-ray binaries, revealing high obscuration, off-states or strong variability, provide new insights on the accretion flow and on the wind of massive stars. We report on the comparison of hydrodynamic simulations with observations by INTEGRAL and XMM-Newton. Simulations can reproduce many aspects of the observed phenomenology. In particular the geometry of the system, neutron star masses and wind velocity could be constrained. The simulated accretion flow predict a lognormal luminosity distribution. The width of that distribution is a characteristic of the accretion flow. Lognormal distributions have been observed in various types of accreting sources but not explained up to now. Hydrodynamical simulations provide an efficient tool to link the properties of the accretion flow to observable quantities.	115	Binaries
Poster	Alfonso	inta	es	High energy emission of variable objects in the OMC-VAR Catalogue	OMC-VAR is the "First Catalogue of Variable Sources observed by OMC", the optical monitoring camera onboard INTEGRAL. The first version of OMC-VAR contains already variability data for 5263 objects, with accurate period determination for 1137 of them. We expect that the final version of OMCVAR, to be released at the end of the Mission, will contain data for around 20.000 optically variable objects. Since many of these variable objects are expected to be high energy emitters, we have cross-correlated OMC-VAR with existing X and gamma-ray catalogues, including the 4th IBIS/ISGRI soft gamma-ray survey catalogue, the XMM-Newton Serendipitous Source Catalogue, the ROSAT All-Sky Bright and Faint Source Catalogues and the Chandra Source Catalog. One of the objectives is to identify potential counterparts in the optical of unclassified high energy sources, as well as to study the fv/fx ratio for large samples of objects of different properties. In this poster we present the preliminary results of this work and the statistical analysis we have performed.	029	

Poster	Bassani	inafb	it	Chasing extreme blazars with INTEGRAL	Within the blazar population, hard X-ray selected objects are of particular interest as they tend to lie at each end of the blazar sequence. In particular, flat spectrum radio quasars located at high redshifts display the most powerful jets, the largest black hole masses and the most luminous accretion disks: their spectral energy distribution has a Compton peak in the sub-MeV region which favours their detection by instruments like INTEGRAL/IBIS. These sources are even more extreme than blazars selected in other wavebands, like, for example, the gamma-ray range explored by Fermi. Here we report on a sample of 14 high redshift blazars detected so far by INTEGRAL (12 secure and 2 candidates) and on the search for similar objects among unidentified sources. The sample covers the redshift range from 1 to almost 4, comprises 20-100 keV luminosities from about 10^{46} to 10^{48} erg s ⁻¹ and black hole masses from 108 to at least 5×10^9 solar masses. Broad-band properties of these sources will be presented and discussed.	041
Poster	Beckmann	apc	fr	The AGN phenomenon: open issues	In a recently published text book (Beckmann & Shrader, 2012) we are discussing in depth the status of AGN research, the open questions and possibilities to answer them. In this presentation we present the main open issues. Is the central black hole rapidly spinning and can we proof this? What is the dominating accretion mechanism in AGN? Why do some AGN form jets and others don't and how do the jets start off? What keeps jets collimated out to distances of 100 kpc? Is the emission of blazars dominated rather by synchrotron self-Compton or by external Compton processes? Which parameters are important in the unified model? Concerning the environment and hosts, the relation between the AGN and the surrounding galaxy and starburst activity are a main issue of debate. And we also still lack an answer to the question, how super massive black holes were able to grow so fast in the early Universe, forming quasars as early as $z \sim 7$. We outline the status of related research, formulate the questions and try to hint at research projects able to tackle these fundamental topics.	011
Poster	Belanger	esac	es	On the Temporal Characteristics of Persistent Integral Sources	A systematic study, characterisation and subsequent grouping in classes based on the temporal characteristics of their emission has not until now been done for the hundreds of persistent sources detected by Integral. This mammoth task is what we have done and wish to present to the Integral and high-energy community on this special occasion of the tenth anniversary of the mission's launch.	126
Poster	Blay	valen	es	An INTEGRAL spectral and timing history of 1A 1118-615	INTEGRAL/IBIS/ISGRI instrument has detected the Be X-ray Binary system (BeXRB) is repeatedly during its 10 years of operations. All variability time scales of the source are covered by these observations: the pulse period of the spinning neutron star, orbital modulated Type I outbursts, and one Type II outburst possibly related to a violent mass ejection episode from the optical counterpart. The orbital period of 24.5 days is clearly detected from ISGRI data. The pulse period changes in the long term and along the Type II outburst are analyzed as well. We also revise the aperiodic variability of the source at short and long time scales and discuss it in the framework of proposed models for accretion onto a neutron star from the equatorial wind of a Be star.	053
Poster	Blay	valen	es	X Per pulse period evolution	The Be X-Ray Binary system X Per has been observed by INTEGRAL/IBIS/ISGRI repeatedly during its 10 years of operations. The source presents an interesting spectral and pulse variability in the high energy range which will be discussed in detail. A continuous spin-up of the source with sporadic sudden changes in pulse period are reported. The possible correlation between timing parameters and spectral parameters is also reviewed.	054
Poster	Bodaghee	berk	us	Chandra provides new X-ray positions for IGR J16393-4643 and IGR J17091-3624	Using the High Resolution Camera on Chandra, we have obtained the most accurate X-ray positions known for IGR J16393-4643 and for IGR J17091-3624. The obscured X-ray pulsar IGR J16393-4643 lies at R.A. (J2000) = 16h 39m 05s. 47, and Dec. = -46° 42' 13" .0 (error radius of 0" .6 at 90%confidence). This position is incompatible with the previously-proposed counterpart 2MASS J16390535-4642137, and it points instead to a new counterpart candidate that is possibly blended with the 2MASS star. The black hole candidate IGR J17091-3624 was observed during its 2011 outburst providing coordinates of R.A. = 17h 09m 07s. 59, and Dec. = -36° 24' 25" .4. This position is compatible with those of the proposed optical/IR and radio counterparts, solidifying the source's status as a microquasar. The other three targets of our observations, IGR J14043-6148, IGR J16358-4726, and IGR J17597-2201, were not detected with 3 upper limits of, respectively, 1.7, 1.8, and 1.5 (in 10^{-12} erg cm ⁻² s ⁻¹) on their observed X-ray fluxes (2-10 keV).	104
Poster	Bodaghee	berk	us	XMM-Newton observations of five INTEGRAL sources located towards the Scutum Arm	Results are presented for XMM-Newton observations of five hard X-ray sources discovered by INTEGRAL in the direction of the Scutum Arm. Each source received >20 ks of effective exposure time. We provide refined X-ray positions for all five targets enabling us to pinpoint the most likely counterpart in optical/infrared archives. Spectral and timing information (much of which are provided for the first time) allow us to give a firm classification for IGR J18462-0223 and to offer tentative classifications for the others. For IGR J18462-0223, we discovered a coherent pulsation period of 997 ± 1 s which we attribute to the spin of a neutron star in a highly-obscured ($N_H = 2 \times 10^{23}$ cm ⁻²) high-mass X-ray binary (HMXB). This makes IGR J18462-0223 the seventh supergiant fast X-ray transient (SFXT) candidate with a confirmed pulsation period. IGR J18457+0244 is a highly-absorbed ($N_H = 8 \times 10^{23}$ cm ⁻²) source in which the possible detection of an iron line suggests an active galactic nucleus (AGN) of type Sey-2 situated at $z = 0.07(1)$. A periodic signal at 4.4 ks could be a quasi-periodic oscillation which would make IGR J18457+0244 one of a handful of AGN in which such features have been claimed, but a slowly-rotating neutron star in an HMXB can not be ruled out. IGR J18482+0049 represents a new obscured HMXB candidate with $N_H = 4 \times 10^{23}$ cm ⁻² . We tentatively propose that IGR J18532+0416 is either an AGN or a pulsar in an HMXB system. The X-ray spectral properties of IGR J18538-0102 are consistent with the AGN classification that has been proposed for this source.	105

Poster	Bodaghee	berk	us	Results from the first year of the INTEGRAL Spiral Arms Monitoring Program	We describe the scientific objectives and preliminary results from the first year of an INTEGRAL Key Programme consisting of high-cadence monitoring of the inner spiral arms of the Galaxy paired with ToO observations of new transients with XMM-Newton and Swift. While these regions are already exposed thanks to the Galactic Plane Scans (GPS), many transients are being missed because of month-long gaps between scans of any particular region. The INTEGRAL Spiral Arms (ISA) program (25.6 ks per spacecraft revolution during visibility periods, for a total of 1.2Ms) complements the successful Galactic Bulge (GB) program by extending the monitored region of the Galaxy to the Inner Perseus/Norma Arm tangents on one side of the GB, and the Scutum/ SagittariusArms on the other. These fields feature a high density of obscured highmass X-ray binaries (HMXBs), including Supergiant Fast X-ray Transients (SFXTs), as well as other hard X-ray emitting sources (e.g. microquasars, low-mass X-ray binaries, and magnetars) that INTEGRAL is well-suited to finding thanks to its large field of view and angular resolution at high energies even in crowded regions of the sky. Mosaic images and source light curves in 2 energy bands for ISGRI and JEM-X are being provided to the community permitting rapid dissemination of results which enable prompt follow-up of interesting events. The ISA project represents the cornerstone of our ongoing study of transient and variable hard X-ray populations in theMilkyWay.	119
Poster	Boggs	berk	us	The Nuclear Compton Telescope	The Nuclear Compton Telescope (NCT) is a balloon-borne soft gamma-ray (0.2- 10 MeV) telescope designed to perform wide-field imaging, high-resolution spectroscopy, and novel polarization analysis of astrophysical sources. NCT employs a novel Compton telescope design, utilizing 12 high spectral resolution germanium detectors, with the ability to localize photon interaction in three dimensions. NCT underwent its first science flight from Fort Sumner, NM in Spring 2009, and was partially destroyed during a second launch attempt from Alice Spring, Australia in Spring 2010. We have begun the rebuilding process and used this as an opportunity to update and optimize various aspects of NCT. The cryostat which houses the 12 germanium detectors is being redesigned so as to accommodate the detectors in a new configuration, which will improve the low-energy response and polarization performance of NCT. We will be replacing the liquid nitrogen detector cooling system with a cryocooler system that will allow for long duration flights. We will discuss the rebuild plans and instrument upgrades for NCT. We will also discuss how NCT will build off the legacies of INTEGRAL in planning for its science flight program.	006
Poster	Bordas	tueb	de	INTEGRAL observations of gamma-ray binaries	The results of new INTEGRAL observations of binary systems that have recently been discovered by both ground and space-based gamma-ray observatories will be reported. We will focus on the analysis results of those data that have been taken contemporaneously to both High Energy gamma-ray observations, which in some cases showed strong flaring emission as reported by the Fermi-LAT Collaboration, and Very High Energy observations by current generation of Cherenkov telescopes, in which enhanced emission during orbital phases close to the the periastron passage have been detected.	086
Poster	Bosnjak	ceas	fr	The spectral catalog of GRBs observed with INTEGRAL: IBIS/SPI joint spectral analysis	On board the INTEGRAL satellite there are two gamma-ray sensitive instruments: the imager IBIS (15 keV-1 MeV), optimized for high angular resolution imaging, and the spectrometer SPI (20 keV - 8MeV) optimized for high resolution gamma-ray line spectroscopy. Combining the data from both instruments allows us to obtain a broad spectral coverage for gamma-ray bursts observed by INTEGRAL. The GRB sample detected by INTEGRAL contains a large fraction of weak events with respect to other instruments due to its higher sensitivity. We present a systematic spectral and temporal analysis of 79 GRBs observed from February 2002 to February 2011 and compare the inferred parameters with the results from other missions. IBIS observations also allow the possibility to examine the burst locations on the long time scales before/after the burst onset, providing an excellent opportunity for the precursor/late emission search. We present the results of this analysis for a subsample of bright GRBs.	117
Poster	Bouchet	irap	fr	INTEGRAL/SPI data segmentation to retrieve sources intensity variations	The INTEGRAL/SPI, X/gamma-ray spectrometer (20 keV - 8 MeV), is an instrument for which the determination of source intensity variation is largely based on a-priori information. We propose two techniques that help to overcome the difficulty and allow to construct source "synthetic" lightcurves in a more rational way. The first method takes advantage of already existing lightcurves, or time series, that can be obtained from other instruments (for example, IBIS, onboard the INTEGRAL observatory, but also SWIFT). The second method does not longer need external lightcurves, but relies directly on SPI raw data. For that, we have developed a specific algorithm that involves the SPI transfer function and able to handle a huge amount of data simultaneously. Some example are given for sources variable on different timescales.	098
Poster	Bourbagamm a	MeV	earth	Gamma-Ray Astronomy 100 keV – 100 MeV: the next step	Despite having studied the nuclear gamma-ray sky for almost five decades with balloon and satellite experiments, many fundamental questions still wait for answers from gamma-ray observation : How do supernovae explode ? What is the origin of Galactic cosmic rays ? How are particles accelerated to extreme energies in the strongest magnetic fields ? Also, despite considerable progress in recent years, the origin and propagation of the galactic positrons has remained as enigmatic as ever. Setting out from what we presently know about the gamma-ray sky, requirements for future space-based telescope are drawn up, and possible mission-scenarios are outlined that significantly enhance the phase-space for discoveries.	153

Poster	Bozzo	isdc	ch	LOFT (the Large Observatory for X-ray Timing)	LOFT (the Large Observatory for X-ray Timing) is one of the four candidate ESA M3 missions competing for a launch opportunity at the start of the 2020s. It is specifically designed to perform fast X-ray timing and probe the status of matter near black holes and neutron stars. The LOFT scientific payload is composed of a Large Area Detector (LAD) and a Wide Field Monitor (WFM). The LAD is an X-ray collimated instrument with 20 times the collecting area of the best past timing missions (such as RXTE), operating in the 2-80 keV energy range. Its ground-breaking effective area, reaching $\sim 10 \text{ m}^2$ at 8 keV, is made possible by the recent advancements in the field of large-area silicon detectors (able to time tag a X-ray photon with an accuracy $< 10 \text{ ms}$ and an energy resolution of $\sim 260 \text{ eV}$ at 6 keV) and capillary-plate X-ray collimators. The WFM large field of view will permit to observe about 50% of the sky available to the LAD in the 2-80 keV energy band at any time. The main scope of the WFM is to catch good triggering sources to be pointed with the LAD. Through the on-board LOFT Burst Alert System (LBAS), the WFM will also be able to detect bright impulsive events and broadcast their position and trigger time within 30 seconds from the discovery. For these events, data collected with fine spectral ($\sim 300 \text{ eV}$) and timing resolution ($\sim 10 \mu\text{sec}$) will be made available to the ground within a few hours from the trigger.	100
Poster	Caballero	ceas	fr	Giant outburst of A0535+26 observed with INTEGRAL	For the first time in February 2011, INTEGRAL caught a giant outburst from the Be/X-ray binary A0535+26, that reached a flux of 3.8 Crab . The source is a highly magnetized accreting neutron star, whose magnetic field of $4 \times 10^{12} \text{ G}$ was derived from the cyclotron lines detected in its X-ray spectrum. Some accreting pulsars exhibit a positive correlation between the cyclotron line energy (E_{cyc}) and the X-ray luminosity (LX), while others show the contrary. Different accretion regimes (either sub- or supercritical) have been proposed to explain the different correlations. However, no correlation between E_{cyc} -LX has so far been observed in A0535+26 phase averaged spectra. The unprecedented coverage of this giant outburst with INTEGRAL allows us to deeply study the cyclotron line evolution with the luminosity. We also present the evolution of other spectral parameters observed during the outburst and the energy dependent pulse profiles as a function of the luminosity. The results are interpreted in the context of the current accretion theory scenario.	074
Poster	Caballero	ceas	fr	INTEGRAL IBIS/ISGRI energy calibration in OSA 10	We present the new ISGRI energy calibration that has been implemented in the Offline Scientific Analysis (OSA) version 10. The ISGRI spectral gain decreases with time, and the energy of the events is corrected using the 511 keV line produced by the on-board radioactive source (^{22}Na) and the fluorescence of Tungsten (W) at 59 keV. With OSA 9, a clear departure from stability of both W and ^{22}Na background lines was observed after revolution 583. To solve this problem, the energy correction in OSA 10 uses: 1) a new description for the gain depending on the time and the events rise time, 2) an improved method of the temperature correction per module, and 3) a low threshold resolution depending on the time. With OSA 10, both background lines show a remarkably stable behavior with a relative energy variation below 1% around the nominal position ($> 6\%$ in OSA 9), and the spectral correction at low energies is more stable compared to previous OSA versions. The energy resolution increases by a factor 2 (3 in OSA 9) between revolutions 39 and 1142. Details of the new energy correction are given together with open issues and perspectives for future work.	075
Poster	Castro	inpe	br	THE MIRAX MISSION: DESCRIPTION AND FIRST BACKGROUND SIMULATIONS	Not known	050
Poster	Castro	inpe	br	XMM and INTEGRAL Simultaneous Observations of 1E 1740.7-2942	We report here the first steps of an ongoing work which aims to study long term spectral and temporal variations of the galactic center microquasar LMXB source 1E 1740.7-2942, using data from the European satellites XMM-Newton and INTEGRAL. By the submission date, we found that 2 observations with XMM of the source (one in 2003 and the other one in 2005) were never reported in the literature. We analyzed the XMM/PN spectrum of the source from 2 to 10 keV in those two dates. The 2003 spectrum is well fitted by a single (absorbed) thermal component, while in the 2005 observation another component is necessary to achieve a good fit showing a (common) spectral variation in the source. We were also able to fit the 2003 spectrum from 2 to 200 keV adding IBIS/INTEGRAL data to the XMM observation. We found that the spectrum is well fitted by the sum of two continuum components (we used simple bb and comptt in XSPEC language). To our knowledge this is one of the few spectra of 1E 1740.7-2942 using simultaneous data from XMM and INTEGRAL (and from 2 to 200 keV).	051
Poster	Chaty	ceas	fr	Herschel observations of INTEGRAL supergiant High Mass X-ray Binaries	We will present preliminary results on Herschel/PACS mid/far-infrared observations of INTEGRAL supergiant High Mass X-ray Binaries (HMXBs), with the aim of detecting the presence of absorbing material (dust and/or cold gas), either enshrouding the whole binary systems, or surrounding the sources within their close environment. These unique observations allow us to better characterize the nature of these HMXBs, to constrain the link with their environment, and finally to get a better understanding of the formation and evolution of such rare and short-living supergiant HMXBs in our Galaxy.	110

Poster	Chelovekov	iki	ru	Search and analysis of type I X-ray bursts based on the IBIS/ISGRI and JEM-X data: current status	We report current results of our search for and analysis of type-I X-ray bursts based on IBIS/ISGRI and JEM-X data. To find bursts we use detector light curves constructed of all the photons detected in the field of view of the IBIS telescope in 15-25 keV energy band with 5 s time bin. So far we have completed the analysis of all the IBIS/ISGRI detector light curves up until March 2011 taking into account all the burst candidates with statistical significances of detection over 2 standard deviations (our previous results were based only on the events more significant than 3 standard deviations). This added several dozens of bursts from well known bursters to our burst catalog which now includes over a 1000 events. We present upper limits to the distances for 16 X-ray bursters and the "burst rate - accretion rate" dependence built based on the current catalog. We are now working on the similar analysis of the JEM-X detector light curves. Preliminary results of this analysis will also be presented.	027
Poster	Chenevez	dtu	dk	What can NuSTAR do for thermonuclear X-ray bursts?	Unstable thermonuclear burning on the surface of accreting neutron stars is commonly observed as type I X-ray bursts. The flux released during some strong bursts can temporarily exceed the Eddington limit, driving the neutron star photosphere to such large radii that heavy-element ashes of nuclear burning are ejected in the burst expansion wind. We have investigated the possibility of observing with NuSTAR some X-ray bursters selected for their high burst rate and trend to exhibit so-called superexpansion bursts. Our main ambition is to detect the photoionization edges associated with the ejected nuclear ashes, and identify the corresponding heavy elements. A positive identification of such edges would probe the nuclear burning processes, and provide a measure of the expansion wind velocity as well as the gravitational redshift from the neutron star. Moreover, we expect that the high sensitivity of NuSTAR in hard X-rays will make it possible to study the behavior of the accretion emission during the bursts, which is an important parameter to constrain the properties of the X-ray burst emission and thermonuclear burning.	012
Poster	Chernenko	iki	ru	Time Resolved Spectroscopy in MeV Domain: Getting the Most from Low Count Rate Data	Many transient and variable astrophysical objects are known to manifest variability starting from at least sub-millisecond time scales. Even with the most advanced modern experiments, spectroscopy with such a high time resolution is hardly or not possible even for the brightest objects of their classes. The use of the Global Fit Analysis (GFA) allows one to investigate spectral variability with the finest time resolution where traditional spectroscopy techniques fail due to low count rate. This is achieved thanks to special assumptions about intrinsic properties of the spectra. With the GFA one could extend spectral analysis to far tails of emission where traditional spectroscopy fails due to low S/N ratio. Or, to reach by an order of magnitude finer time resolution during brighter periods of the emission. In GFA, instead of parameterizing individual spectra and analyzing spectral evolution in terms of numerous individual spectral fit parameters we define a spectral evolution model with a set of constant global parameters and just a few (N=1-2) time dependent variables. Besides the time histories of physically meaningful spectral parameters GFA also allows us to obtain, for each object, a set of global parameters for population studies.	004
Poster	Chernyakova	dublun	ie	Variability of the GeV sky	Abstract: Variability is a characteristic feature of compact gamma-ray sources which might serve to distinguish such sources from excesses in diffuse gamma-ray emission from the Galaxy. We perform a systematic study of variability of emission from the GeV sky, via construction of variability maps. We find that emission from several directions along the Galactic plane is significantly variable on month time scale. These directions include, apart from known variable Galactic sources and background blazars, the Galactic ridge region at positive Galactic longitudes and several regions containing young pulsars. We argue that month-time scale variability may be common to pulsars, originating from the inner parts of pulsar wind nebulae, similarly to what is observed in the Crab pulsar. Systematic study of the variability properties of different gamma-ray sources reveal a strong positive correlation between flux and the variability measure in the FSRQ type blazars, while the specified parameters are only weakly correlated for BL Lac type blazars, non-blazar AGNs and AGN of uncertain types.	093
Poster	Coleiro	ceas	fr	Identification of new X-ray binaries detected by INTEGRAL through near infrared photometry and spectroscopy	Identification of a substantial number of Galactical X-ray Binaries, detected by the INTEGRAL satellite, is required to start a population study. We will show new results of optical and infrared photometry and spectroscopy, carried out using the ESO facilities, which constrain the spectral type and the class of these sources. Identification of 17 new High Mass X-ray Binaries during our last infrared observation campaign with the SOFI instrument on the La Silla/NTT telescope will be presented for the first time, with implications on the nature of the sources discussed.	018
Poster	Cusumano	inafp	it	The 4th Palermo Swift-BAT catalogue: 7 years of Survey of the hard X-ray sky	We present the 4th Palermo Swift-BAT hard X-ray catalogue obtained by analyzing data acquired in the first 7 years of the Swift mission. Using our software dedicated to the analysis of data from coded mask telescopes, we analyzed the BAT survey data in different energy bands between 15 and 150 keV. The survey covers 50% of the sky to a 15-150 keV flux limit of 7.0×10^{-12} erg cm ⁻² s ⁻¹ . The source detection algorithm has been improved to optimize the energy band and the time interval that allow to achieve the maximum signal to noise ratio for each pixel of the all-sky map. We obtain a list of ~1800 source candidates with a negligible number of spurious detections. The identification of the source counterparts in the softer energy band is pursued using two strategies: the analysis of field observations of soft X-ray instruments and crosscorrelation of our catalogue with source databases. The distribution of the BAT sources among the different object classes consists of ~15% Galactic sources, ~49% extragalactic sources, ~12% sources with a counterpart at softer energies whose nature has not yet been determined while ~24% still lack any associated counterpart.	036

Poster	de Jong	apc	fr	The nearby (D=16 Mpc) FRI radio galaxy M87 is one of the best studied examples of a gamma-ray bright radio galaxy.	The nearby (D=16 Mpc) FRI radio galaxy M87 is one of the best studied examples of a gamma-ray bright radio galaxy. While in the X-ray band below 10 keV, the nucleus of this source shows strong variability, the source does not seem to be detectable in the hard X-ray domain by e.g. Swift or INTEGRAL. Because Chandra data indicate that at least during some periods a significant hard X-ray emission takes place, we investigate 5 Ms of INTEGRAL IBIS/ISGRI data in order to establish the best upper limit in this energy range to date (preliminary analysis gives an average over 8 years of $f < 3 \times 10^{-12}$ ergs/cm ² /s at 20-60 keV). We also use other unpublished data from INTEGRAL OMC and JEM-X, for which we found average values of 10.5 mag in the V-band and $f = 1.7 \times 10^{-11}$ ergs/cm ² /s between 3-10 keV respectively, together with data from other wavelengths, including Fermi/LAT, to investigate the broad-band spectral energy distribution of M87. The combination of Chandra data in several spectral states together with the upper limit on the averaged hard X-ray emission allows to constrain the duty cycle of bright episodes of the central engine.	044
Poster	Egron	cagliU	it	Testing reflection features in 4U 1705 44 with XMM-Newton, BeppoSAX and RXTE in the hard and soft state	We use data of the bright atoll source 4U 1705 44 taken with XMM-Newton, BeppoSAX and RXTE both in the hard and in the soft state to perform a self-consistent study of the reflection component in this source. Although the data from these X-ray observatories are not simultaneous, the spectral decomposition is shown to be consistent among the different observations, when the source flux is similar. We therefore select observations performed at similar flux levels in the hard and soft state in order to study the spectral shape in these two states in a broad band (0.1-200 keV) energy range, with good energy resolution, and using self-consistent reflection models. These reflection models provide a good X-ray spectrum both in the hard and in the soft state in the whole spectral range. We discuss the differences in the main spectral parameters we find in the hard and the soft state, respectively, providing evidence that the inner accretion disk is truncated further from the compact object in the hard state.	167
Poster	Eikmann	erla	de	Monte Carlo simulations of X-ray absorption in the interstellar medium	The shape and intensity of fluorescence lines is an important diagnostic tool to explore the characteristics of the material along the line of sight from an X-ray source. We present a Monte Carlo simulation of radiative transfer through a neutral gas, including photo-absorption, fluorescent line emission, and Compton (down-)scattering. The primary spectrum is emitted by a source which is located either in the center of a spherical cloud or above a semi-infinite slab. In the former case, a pure transmitted spectrum is obtained while in the later case the reflected component is of interest. We present the dependence of the equivalent width of the Fe K α line and the relative flux of the first Compton shoulder as a function of N_H . The results of these calculations have been implemented in a revised version of the absorption model tbabs that is appropriate for columns in excess of 10^{24} cm ² .	168
Poster	Esposito	isdc	ch	The high-energy spectrum of 3C 273	The high energy spectral shape of 3C 273 can be explained successfully by inverse-Compton scattering in a relativistic electron-positron jet. This model predicts variability patterns and delays which could be tested if simultaneous observations are available from the optical to the GeV range. The instruments IBIS, SPI, JEM-X and OMC onboard INTEGRAL and LAT onboard Fermi have enough sensitivity to follow the spectral variability from the eV to the GeV and to compare them with model predictions. We are presenting preliminary results on the high energy spectrum of 3C 273 and its variability and compare these results to the available models.	125
Poster	Evangelista	inafr	it	The Wide Field Monitor onboard the Large Observatory For x-ray Timing (LOFT)	The Large Observatory for X-ray Timing (LOFT) is one of the four candidate ESA M3 missions considered for launch in the 2022-2024 time frame. It is specifically designed to perform fast X-ray timing and to probe general relativity at extreme field strengths near black holes and neutron stars and probe matter at supranuclear densities in neutron stars. The LOFT scientific payload is composed of the Large Area Detector (LAD) and the Wide Field Monitor (WFM). Here we describe the LOFT WFM, a compact and light-weight coded mask instrument with a detection plane based on the large-area Silicon drift detector (SDD) technology. The instrument is designed to cover a large FoV in the same energy range as the Large Area Detector, namely almost 50% of the sky in 2-80 keV (2-50 keV of nominal energy range and 50-80 keV of extended energy range). Its design would allow the detection of transient events with fluxes down to a few mCrab per day, with unprecedented spectral resolution for a Wide Field Monitor (better than 300 eV at 6 keV), a timing resolution of about 10 μ s and an angular resolution of 4.7 arcmin, which translates into a sub-arcmin PSLA for high significance (>10 s) detections. Such performance will allow to trigger LAD observations of the most interesting sources, and to study long-term variability of LMXBs, HMXBs and some AGN, and detect and localize GRBs. Moreover, the WFM is equipped with the LOFT Burst Alert System (LBAS), an onboard trigger and imaging system and with a fast-link (<30 s) transmission of the position of fast transients.	134
Poster	Fürst	calt	us	GX 304-1 and NuSTAR's plans on transient X-ray binaries	By combining the individual powers of INTEGRAL, Suzaku, and NuSTAR, we are able to take a very detailed look on the X-ray production region in galactic binaries. NuSTAR's unprecedented sensitivity and energy resolution in the hard X-rays between 5 and 80 keV allows to investigate the shape of spectral features like cyclotron resonant scattering features (CRSFs) on very short timescales. I will discuss the observation plans of NuSTAR over the next two years, in combination with INTEGRAL and Suzaku. As an example, results from Suzaku and INTEGRAL observations of the January outburst of the transient neutron star binary GX 304-1 will be shown. We find a cyclotron line around 50 keV, of which the exact energy is changing with flux. I will also discuss the behavior of the line with pulse phase. By adding simulated NuSTAR spectra the possibilities of the combination of these instruments becomes clear. This combination will allow for the first time to thoroughly test newly developed physical models, describing the physical conditions, magnetic field, and geometry in the accretion column.	108

Poster	Goldoni	apc	fr	First results of X-shooter observations of IGR sources	X-shooter is a second generation ESO-VLT instrument that had its first light in October 2009. It is a single object medium-resolution spectrograph whose main feature is the capability of covering simultaneously in a single observation the range from 3000 to 24000 Angstrom. This unique capability is very well suited to investigate the complex spectra of the optical counterparts of X/gamma ray sources which usually display signatures of different components in emission and absorption. In July 2012 we observed with X-shooter a small sample of counterparts of bright IGR sources in order to better determine their physical properties. We present the first results of these observations.	065
Poster	Goossens	soton	uk	Searching For the Orbital Period of IGR J184500435	The source IGR J18450-0435 was characterised by INTEGRAL as a supergiant fast Xray transient system considering its recurrent flaring behaviour as well as its association with a supergiant star. Fast outbursts from SFXTs are very rare and long periods of inactivity occur which makes it difficult to identify periodicities in these systems. Due to this, finding periodic signals can only be achieved through longterm, well-sampled monitoring. Here we present a comprehensive temporal study of IGR J18450-0435 using data from across the INTEGRAL mission. The Lomb-Scargle method was used on the 18- 60 keV light curve and a periodic signal was detected that we interpret as the orbital period of the binary system. Monte Carlo simulations were performed to calculate significance levels for the periodogram and the signal was observed to be significant to greater than 5s. Additionally, we present a complete outburst history of IGR J18450-0435 as seen by IBIS. By taking into account the corresponding orbital phases at which the outbursts occur more constraints on the geometry of the system can be considered. IGR J18450-0435 is therefore a further SFXT with an identified orbital period and we discuss this result within the context of the SFXT population as a whole.	070
Poster	Grinberg	erla	de	Cygnus X-1: shedding light on the spectral variability of black holes	Cygnus X-1 is one of only three persistent black hole binaries in our galaxy that spend most of their time in the hard spectral state. After spending 3 years in the hardest regime of its parameter space, the source entered a series of prolonged soft states in summer 2010. While the hard X-ray spectrum of Cyg X-1 is one of the best studied examples of its kind, e.g. through our 14-year-long bi-weekly monitoring campaign with RXTE, the INTEGRAL monitoring allows us to study the spectral evolution from about half an hour over a few days to a few weeks, timescales that have been only sparsely sampled so far. We constrain the parameter ranges for different spectral models in the hard and the usually elusive soft state. We further discuss them with a special focus on the comparison with previous RXTE observations Cyg X-1 as well as observations of transient sources, where such measurements, which are important in order to understand the physics of the hot plasma of the jet base and/or the corona, are typically difficult to obtain with high accuracy.	092
Poster	Gros	ceas	fr	The IBIS/ISGRI Source Location Accuracy	We present updated results concerning the Point Source Location Accuracy of the INTEGRAL IBIS/ISGRI Coded Mask telescope, based on the ten years of data of the INTEGRAL satellite and the most recent developments in the data analysis techniques. In particular the results we obtained benefit of the most accurate background corrections, of the most performing coding noise cleaning and sky reconstruction algorithms available today for the IBIS/ISGRI data and also of the most advanced methods to determine the source location from a coded mask imaging system. The results will be compared to previous estimations and also to theoretical expectations and numerical simulations in order to emphasize the general results that are valid for any kind of coded mask system.	132
Poster	Hanlon	dublun	ie	Study of Silicon Photomultipliers for the Readout of Scintillator Crystals in the GRIPS Mission	GRIPS is a proposed gamma-ray astronomy mission (200 keV to 80 MeV), which incorporates an X creation and Compton scattering telescope.... [Copy/paste problems in PDF]	094
Poster	Hertel	erla	de	Suzaku observations of the multiple cyclotron source 4U 0115+63	We present observations of the high mass X-ray binary 4U 0115+63 taken with the X-ray Imaging Spectrometers (XIS) aboard Suzaku satellite. The observations were performed on 2011-07-05 for 24 ks at 140 mCrab and on 2011-07-08 for 42 ks at 80 mCrab. 4U 0115+63 is a high mass X-ray binary composed of a neutron star and a Be star. The outbursts of this accreting X-ray pulsar are correlated with its periastron and last for several weeks or months, usually longer than its orbital period of 24.3 days. The source is the only one known to show five cyclotron resonance scattering features, which makes it an outstanding laboratory to study the physics of accreting X-ray pulsars. In this work, different broadband continuum models are applied to the data and compared among each other. Further on, the correlation of the cyclotron resonance scattering features with the Xray flux is investigated.	111

Poster	Hübner	esoc	de	Here comes the Sun – Reliable forecasting of the effects of solar flares on INTEGRAL?	How does INTEGRAL react on the different flavours of solar flares? Space weather forecasting is even more difficult than weather forecasting here on Earth. Sunspots can develop strong magnetic fields that harbour energy for strong solar flares. Since the high proton and electron fluxes of such solar flare events pose a risk to electronics, the INTEGRAL on-board Radiation Environment Monitor (IREM) is used to protect INTEGRAL's scientific instruments by autonomously switching them to a safe configuration in case of high background radiation, e.g., due to such a solar flare. While this mechanism protects INTEGRAL, it may cause significant disruptions to scientific and spacecraft observations and even more so in case of "special operations" such as the currently ongoing Earth observations that could be avoided if a reliable prediction approach were available. The NOAA satellite broadcast system provides on-line, almost real-time space weather alerts and distributes emergency space weather warnings to the public. This data is combined with the precise data on the local radiation environment around INTEGRAL as measured by IREM as well as the experiences gathered during the 10 years of INTEGRAL operations and the 13 years of XMM Newton operations in order to review the impact of approaching solar flares on INTEGRAL and to potentially develop a prediction model. This paper summarises the effects of solar flares on INTEGRAL operations. Furthermore, it discusses, whether reliable forecasting of the effects of solar flares on the spacecraft is possible.	076
Poster	Kazanas	gsfc	us	Is the Prompt GRB Liso-Lag Correlation the Same as the Afterglow LX-Tbrk One ?	We present the relation between the (z- and k-corrected) spectral lags, τ , for the standard Swift energy bands 50-100 keV and 100-200 keV and the peak isotropic luminosity, L_{iso} , for a set of long Swift GRBs (a relation reported first by Norris et al.). The chosen GRBs are in fact a subset of the Dainotti et al. sample, a set of Swift GRBs of known redshift, employed in establishing a relation between the (GRB frame) luminosity, L_X , of the shallow (or constant) flux portion of the typical XRT GRB-afterglow light curve and the (GRB frame) time of transition to the normal decay rate, T_{brk} . We also re-derive the $L_X - T_{brk}$ relation using only the bursts common in the two samples. The two relations exhibit a significant degree of correlation ($r = -0.65$ for the $L_{iso} - \tau$ and $r = -0.88$ for the $L_X - T_{brk}$ relation) and have surprisingly similar best-fit power law indices (-1.19 ± 0.17 for $L_{iso} - \tau$ and -1.10 ± 0.03 for $L_X - T_{brk}$). Even more surprisingly, it appears that the first ($L_{iso} - \tau$) extrapolates into the second one for lags $\tau > T_{brk}$. This fact suggests that these two relations have a common origin, which we conjecture to be likely kinematic. This relation adds to the recently discovered relations between properties of the prompt and afterglow GRB phases, indicating a much more intimate relation between these two phases than hitherto considered. In addition, we present, for the same set of GRBs, an anti-correlation between the (corrected) spectral lag τ and the peak energy $E_p(1+z)$ in the GRB source frame, a relation implying the simultaneous validity of the Norris et al. and Yonetoku relations.	137
Poster	Kreykenbohm	tueb	de	The eROSITA Near Realtime Analysis	eROSITA is one of the two main instruments on the upcoming Russian Spectrum- X-Gamma mission. eROSITA will perform a detailed and deep All Sky Survey in hard X-rays (0.2-10 keV) using 7 X-ray telescopes which provide an unprecedented combination of collecting area, field of view, and resolution. The flux limit reached during the survey will be at least one order of magnitude lower than the flux limit of the ROSAT All Sky Survey. It is expected that eROSITA will discover over 100 000 galaxy clusters and more than 3 million AGN. We present an overview of the eROSITA pre-processing and Near Real Time Analysis (NRTA) software. As a first step, the incoming binary telemetry files are decoded and the event and housekeeping (HK) information is written to separate FITS files. In a second step, the corresponding FITS files are then merged and chronologically sorted. Finally, the FITS files are split into eROSITA Days and stored in the archive. Health checks like whether all HK counters are within normal limits or badpixel detection are then performed to identify possible problems of the instrument as early as possible. Detector maps and HK graphs are displayed for visual inspection using a Web Interface. The third step is to run the eROSITA standard pipeline to obtain sky images, source catalogs, and spectra. Simulated telemetry streams (see also poster by C. Schmid) can be used as input data to test the eROSITA NRTA software.	069
Poster	Krivonos	berk	us	Diffuse gamma-ray emission from the Milky Way: 10 years of INTEGRAL observations	The recent years are the golden age for studying the Galactic Ridge X-ray Emission (GRXE) when the paradigm of its origin has been dramatically changed from the «truly diffuse» to «point source» scenario. Significant contribution to understanding GRXE has been done by INTEGRAL observatory. In this talk we review the campaign for studying spectral and morphological properties of GRXE during 10 years of INTEGRAL observations, as well as recent studies with Chandra and Suzaku satellites and hopefully the observations with planned NuSTAR mission.	026
Poster	Krivonos	berk	us	INTEGRAL/IBIS nine-year Galactic hard X-ray survey	Our Milky Way is the "nearest" galaxy where we can study the population of X-ray sources in great detail. However, in order to obtain an overall picture, one needs wide-angle telescopes, such as those on-board the INTEGRAL observatory. Surveying our Milky Way Galaxy in hard X-rays is one of the tasks which INTEGRAL has performed with great success. We present the deepest ever existing hard X-ray picture of the Galaxy exposed during nine years of observations. This map provides a unique and highly complete sample of the Galactic source population – a solid basis for future population studies (INTEGRAL POM, August 2012).	171
Poster	La Parola	inafp	it	A SEARCH FOR HEAVILY OBSCURED AGN IN THE 2ND PALERMO BAT Survey	The 2nd Palermo BAT Catalogue, derived from the first 54 months of survey, contains 1256 sources, and is the largest collection of hard X-ray emitters produced till now, providing the possibility of population studies on large samples of sources. We are using the 2PBC sample of extragalactic objects to study their spectral properties, focusing on their obscuration characteristic. Combining the Swift XRT (0.2-10 keV) and Swift-BAT(15-150 keV) spectra of the sources in this sample, we are able to identify some Compton thick or heavily absorbed sources, to study their broadband spectral properties, and how their distribution fit in the current X-ray background models.	037

Poster	Landi	inafb	it	Hard X-ray properties of cataclysmic variables	Recent hard X-ray surveys have proven efficient in detecting cataclysmic variables (CVs), in particular magnetic systems (mCVs). This has allowed us to construct a sample of CVs (mainly Intermediate Polars) selected in hard X-rays, i.e. those observed both by INTEGRAL/IBIS and Swift/BAT. Starting from this selected sample it is possible to investigate their hard X-ray spectral characteristics and linked them to observational features like the orbital and spin periods (P_{orb} , P_{spin}). In this way, it will be possible to assess their location relative to the period gap, and hence get information about the CVs evolution and accretion geometries on the surface of the white dwarf. Last but not least, hard X-ray data, providing information about the temperature of the post-shock region, play a key role in the assessment of the white dwarf mass.	079
Poster	Landi	inafb	it	Swift/XRT observations of newly discovered INTEGRAL sources	The most recent IBIS/ISGRI surveys list many still unidentified sources, i.e. those lacking an X-ray counterpart or simply not studied at lower energies (below 10 keV). The X-ray telescope (XRT, 0.3-10 keV) on board Swift, thanks to its few arcseconds source location accuracy, is a powerful tool with which the X-ray counterparts to these IBIS sources can be searched for and studied. To this aim, we have used the XRT archive to look for still unpublished observations in order to study a subset of these unidentified INTEGRAL sources. In this poster, I will present the outcome of this analysis and discuss those objects having either X-ray data of sufficient quality to perform a reliable spectral analysis or having interesting multiwaveband properties.	080
Poster	Li	ihep	cn	INTEGRAL view of gamma-ray binaries	We present published and yet unpublished results from INTEGRAL as well as other X-ray observations of the gamma-ray binaries LS 5039, LSI +61 303, and 1FGL J1018.6-5856. The analysis is focused on timing, spectral, and long-term monitoring, and is linked to their gamma-ray emissions. For LSI +61 303 we carry out a systematic analysis spanning the last 10 years in hard X-ray with INTEGRAL data and in soft X-ray with RXTE data. A periodic signal at 27 ± 4 days in hard X-ray is detected, matching the orbital period of 26.496 days. The orbital lightcurve is obtained and compared with those derived at other frequencies. We found evidence for the years-long super-orbital modulation in the X-ray, which may hint that LSI +61 303 is subject to a flip-flop behavior between an ejector to a propeller along each orbit. 1FGL J1018.6-5856, is a new gamma-ray binary discovered by Fermi-LAT. We present the first hard X-ray analysis based on INTEGRAL observations. A detection is made at a significance level of 5.4 in 18–40 keV band and a significant part of the signal is located at phases 0.4–0.6, which is anti-correlated with the GeV maximum of the Fermi-LAT periodicity. We also present analysis of the high mass X-ray binary 4U 1036-56 based on INTEGRAL and Swift observations and discuss whether 4U 1036-56 could possibly be associated with the unidentified transient gamma-ray sources AGL J1037-5708 and GRO J1036-55 as may be prompted by its positional correlation.	068
Poster	Maiolino	inpe	br	A Hard X-ray Study of Sco X-1 Using INTEGRAL	Sco X-1 is a LMXB Z source, it is the brightest persistent soft X-ray source in the sky and in 2012 we are celebrating the 50th anniversary of its discovery. The goal of this work is a long term study using 14 public observations distributed between the years 2003 and 2010 using INTEGRAL/IBIS data. The spectra was studied in the energy range 20-200 keV. A Comptonization model (compTT in XSPEC) was used to fit the spectra up to 50 keV and a power law model (PEGWRLW) to fit the spectra from 40-50 keV up to 200 keV. Only in one of the observations the non-thermal component was not detected. The mean photon index found on the observations in which the non-thermal component was present is 3.06 ± 0.21 . This agrees well with observed values for bright LMXBs. A correlation was found between the indices in the two bands (20- 50 and 50-200 keV). It is our interpretation that this correlation supports the origin of the non-thermal flux being due to the Comptonization of lower energy seed photons. To our knowledge this is the first time that the origin of the Sco X-1 hard X ray is attributed to Comptonization.	030
Poster	Malzac	irap	fr	Spectra and fast multi-wavelength variability of compact jets powered by internal shocks.	The emission of steady compact jets observed in the hard spectral state of X-ray binaries is likely to be powered by internal shocks caused by fluctuations of the outflow velocity. The dynamics of the internal shocks and the resulting spectral energy distribution (SED) of the jet is very sensitive to the shape of the Power Spectral Density (PSD) of the fluctuations of the jet Lorentz factor. I used both Monte-Carlo simulations and semi-analytical methods to investigate this dependence. It turns out that Lorentz factor fluctuations injected at the base of the jet with a flicker noise power spectrum (i.e. $P(f) \sim 1/f$) naturally produce the canonical flat SED observed from radio to IR band in X-ray binary systems in the hard state. This model also predicts a strong, wavelength dependent, variability that resembles the observed one. In particular, strong sub-second variability is predicted in the infrared and optical bands. The complex timing correlations observed between the IR/optical light curves and the X-rays can then be used to probe the accretion/ejection connection on short time-scales.	169
Poster	Marandon	apc	fr	Chandra spectro-imaging analysis of the young composite SNR associated with IGR J14003-6326	The Galactic composite supernova remnant (SNR) G310.6-1.6, associated with IGR J14003-6326 has been discovered thanks to a Chandra follow-up towards unidentified INTEGRAL sources. This system harbors one of the most energetic pulsars in the Galaxy ($\dot{E} = 5.1 \cdot 10^{37}$ erg.s ⁻¹) with a characteristic age of 12700 years. Nevertheless, a multi-wavelength study of the spectro-imaging properties of this source has shown it to be much younger (~ 1000 years), and arising from a subenergetic SN explosion in a low-density medium. Another interesting property is that it is one of the few SNRs to exhibit a non-thermal X-ray shell, demonstrating that efficient particle acceleration is currently on-going. Following this discovery, we obtained a deep Chandra exposure (50 ks) on this source, which reveals finer details and interesting features on the SNR and pulsar wind nebula (PWN) morphologies, as compared to the previous dataset. We will present the results of this new observation, and discuss the implications on the particle acceleration mechanisms which occur in both the shell and the PWN.	139

Poster	Mereghetti	inafm	it	Ten years of IBAS	IBAS (INTEGRAL Burst Alert System) is the automatic software for the real time detection of Gamma-Ray Bursts and other astrophysical transients discovered by the IBIS/ISGRI and SPI/ACS detectors. Thanks to IBAS, INTEGRAL has been the first satellite to provide accurate (arcminute level) localizations of GRBs within a few seconds, a task now routinely performed by dedicated satellites like Swift. After ten years of successful operations, it is timely to review the performances of IBAS and to highlight its most interesting discoveries in order to assess the unique capabilities that INTEGRAL can continue to provide in the field of high-energy transients in the coming years.	059
Poster	Minaev	sriMosc	ru	Investigation of the spectral lag - energy relation of GRBs registered by INTEGRAL	We investigated dependence of a spectral lag against energy band based on 28 bright GRBs registered by SPI and IBIS/ISGRI of INTEGRAL observatory. It is found that for simple structure bursts or separate pulses of multi-peaked bursts the energy-dependent lag can be approximated by the relation of $\tau \sim A \cdot \log(E)$, where A is a positive parameter, which correlates with a pulse duration. We also have not found any negative lag in simple structure bursts or in well separated pulses. While investigating the time profile of the whole burst negative lag may appear due to pile-up of pulses with different spectral parameters.	166
Poster	Molina	inafb	it	The INTEGRAL/IBIS Complete Sample of Type 1 AGN	The determination of the slope of the continuum emission of AGN and its high energy cut-off is essential for spectral modeling of AGN, since these two parameters are deeply linked to the physical characteristics of the Comptonising region around the central black hole. While the photon index distribution has been well investigated, observational results on the cut-off energy have so far been limited by the scarcity of measurements above 10-20 keV. Although broad-band measurements of AGN have been made in the past, these did not generally pertain to a complete sample of sources. Here we present a follow-up on the analysis of the INTEGRAL complete sample of AGN (Molina et al. 2009). Thanks to data obtained through an XMM programme, we are able to study the broad-band spectra and to characterize the general average properties of all 44 type 1 active galaxies of the complete sample. We aim at defining the distribution of photon indices, high energy cutoffs, reflection fractions, absorption properties, presence of soft excesses and warm absorbers, together with an in-depth analysis of their parameter space.	040
Poster	Muleri	inaf	it	The X-ray Imaging Polarimetry Explorer mission	The X-ray Imaging Polarimetry Explorer is a mission proposed to ESA Small Mission Call 2012. Its main objective is to open the polarimetric window also in the X-rays with a set of two focal plane polarimeters sensitive in the 2-10 keV energy range. Additional instruments are dedicated to solar flares polarimetry and Sun photometry. To be compliant with the tight schedule and cost limits of small mission program, XIPE is largely based on existent items and mature technologies. Nonetheless, XIPE will have the sensitivity to study the acceleration of particles in pulsar wind nebulae, shell-like supernova remnants and jets in microquasars and blazars. It is also expected to give important results in the study of matter in extreme conditions, providing a measurement of the spin of galactic black holes, the orientation of magnetic field versus rotation axis in magnetized neutron stars and testing theories of fundamental physics by using cosmic scenarios as a laboratory.	128
Poster	Müller	tueb	de	A0535+26 during the 2010 outburst observed with INTEGRAL and RXTE	Many neutron star X-ray binary systems show high variability in the X-ray luminosity accompanied by spectral changes. For some systems, correlations of the spectral continuum and the cyclotron line energy with the source flux have been reported. We studied the Be/X-ray binary system A0535+26 during its 2010 outburst, which was monitored with INTEGRAL and RXTE. We analyzed the phase-averaged, pulse-phase-resolved and pulse-to-pulse spectra. The photon index decreases with increasing source flux, indicating a hardening of the spectrum during the decline of the outburst. The cyclotron line energy is found to stay rather constant with changing flux. In the pulse phase resolved analysis we observe indications for a spectral hardening and a positive cyclotron line energy-flux correlation for some phase bins, mainly during the secondary peak of the pulse profile. A similar behavior is seen in the pulse-to-pulse analysis, where a hardening of the spectrum with flux and an indication of a positive E_{cyc} -flux correlation is observed. It is thought that the flux-related spectral changes reflect the accretion regime operating in the source. We discuss our results within the framework of different accretion regimes and compare our findings with the behavior observed in other sources (Her X-1, GX304-1).	123
Poster	Paizis	inaf	it	Giant On-Line INTEGRAL Archive (GOLIA) @INAF-IASF Milano	We present the archive of the INTEGRAL data developed and maintained at INAF-IASF Milano. The archive comprises all the public data currently available (revolutions 0026-1045, i.e., December 2002 - May 2011). INTEGRAL data are downloaded from the ISDC, Geneva, on a regular basis as they become public and a customized analysis using the OSA 9.0 software package is routinely performed on the IBIS/ISGRI archive. The scientific products include individual pointing images and the associated detected source lists in the 17-30, 30-50, 17-50 and 50-100 keV energy bands, as well as light curves binned over 100 s in the 17-30 keV band for sources of interest. Documentation and ad-hoc tools to browse and visualize the results have also been developed. The whole database (raw data and products) enables an easy access to the hard-X long-term behaviour of a vast sample of sources, be they Galactic (e.g., discovery of periodic outbursts from the Supergiant Fast X-ray Transient IGR J11215-5952, and of hard tails from Low Mass X-ray Binaries) or extra-Galactic (AGNs).	013

Poster	Parisi	inaf	it	Identification of newly-discovered sources belonging to the 4th IBIS catalog and to the 54 months Palermo Swift/BAT catalog	The most recent all-sky surveys performed with the INTEGRAL and SWIFT satellites allowed the detection of more than 1500 sources in hard X-rays above 20 keV. About one quarter of them has no obvious counterpart at other wavelengths and therefore could not be associated with any known class of high-energy emitting objects. Although cross-correlation with catalogues or surveys at other wavelengths (especially soft X-rays) is of invaluable support in pinpointing the putative optical candidates, only accurate optical spectroscopy can reveal the true nature of these sources. With the aim of identifying them, we started in 2004 an optical spectroscopy program which used data from ten telescopes worldwide and which proved extremely successful, leading to the identification of about 200 INTEGRAL objects and nearly 130 Swift sources. Here we want to present a summary of this identification work and an outlook of our preliminary results on identification of newly-discovered sources belonging to the 4th IBIS catalog and to the 54 months Palermo Swift/BAT catalog.	015
Poster	Pavan	isdc	ch	Soft X-ray follow-up of five hard X-ray emitters	In this presentation we report on our study of soft X-ray emission from several IGR and other hard X-ray sources: IGR J08262-3736, IGR J17354-3255, IGR J16328-4726, SAX J1818.6-1703, and IGR J17348-2045. The first four sources are confirmed and candidate high mass X-ray binaries, while IGR J17348-2045 is an unidentified source discovered with INTEGRAL. Through dedicated XMM-Newton observations, we obtained the first detailed soft X-ray spectral and timing study of IGR J08262-3736 (a confirmed supergiant high mass X-ray binary) and IGR J17348-2045. For the latter we identified for the first time the soft X-ray counterpart and we propose the association with a close-by radio source, suggesting an extragalactic origin. We discuss the results of all observations, and show how these strengthen the association of the candidate sources to the class of supergiant fast X-ray transients. 1	106
Poster	Pizzichini	inafb	it	Search for properties of Gamma-Ray Bursts at high redshift	I shall report on an ongoing search for peculiar properties of the prompt emission of Gamma-Ray Bursts at high redshift.	091
Poster	Rodes	alic	es	On the physical meaning of the 2.1 keV absorption feature in 4U 1538 52	The improvement of the capabilities of current X-ray observatories, like Chandra or XMM-Newton, offers the possibility to detect both absorption and emission lines to study the nature of the matter surrounding the neutron star in X-ray binaries and the phenomena that produce these lines. The aim of this work is to discuss the different physical scenarios that could originate the absorption feature at 2.1 keV present in the X-ray spectrum of this source. We discard the possibility that this feature is due to calibration or gain effects. Likewise, we discard an origin from the dust region or as a background feature. Possible sites for the origin at the atmosphere of the neutron star or by dispersion of the stellar wind of the optical counterpart are discussed.	024
Poster	Rodriguez-G.	lesia	fr	Using SPI/INTEGRAL to study the Sun	Solar radiation storms caused by Solar Energetic Particle (SEP) events are one of the most severe hazards in space environment, important for the launch and operation of space vehicles, and for space missions and human exploration of the inner solar system. Therefore, it is of great importance to be able to predict the occurrence and the intensity of such kind of events. However, at present there is still a poor knowledge about the solar source and their origin. The SEPServer project (FP7) aims at building an on-line server that will provide the space research community with SEP data and related observations of solar EM emission, as well as with data- and simulationbased analysis methods. In this contribution I will present the work that is being carried out within this project. Specifically, I will show the results of the analysis of the gamma-ray SPI/INTEGRAL data, as well as the results of numerical simulations of the ACS BGO-detector response for several solar flares occurred during the 23rd solar cycle.	021
Poster	Sahiner	metu	tr	Comprehensive study on RXTE & INTEGRAL observation for the X-ray Pulsar 4U 1907+09	None provided in text format	001
Poster	Sanchez	esac	es	Multiwavelength observations of MAXI J1305-704	X-ray transients (XT) are characterized by long periods (months to decades) of quiescence, which they only depart for brief periods of time (of the order of weeks or months) during which they accrete at significantly higher rate, and their X-ray brightness increases by several orders of magnitude. MAXI J1305-704 is an XT discovered by MAXI onboard the International Space Station on April 9 2012. Here we report the results of Target of Opportunity (TOO) observations of MAXI J1305-704 carried out on April 19th 2012 with INTEGRAL, Swift and REM.	095
Poster	Sauvageon	sacs	fr	ISGRI background evolution and noisy pixel handling	Not known	154

Poster	Schmid	erla	de	LOFT Simulation Toolkit	The Large Observatory For X-ray Timing (LOFT) has been selected by ESA as a candidate for the Cosmic Vision M3 mission. The mission concept comprises a Large Area Detector (LAD), which is a collimated instrument with an assembly of Silicon Drift Detectors providing an effective area of at least 10 m ² at 8 keV and excellent timing capabilities. The second instrument on LOFT, the Wide Field Monitor (WFM), consists of several coded mask cameras monitoring a large fraction of the sky and therefore providing the capability to detect transient events. We have developed a simulation software in order to investigate the performance of LOFT during the current assessment phase. It comprises a model of the LAD and allows to generate a sample of virtual photons that can be further processed with an instrument simulation of the WFM developed at INAF/IASF Roma. We provide access via a web interface to simulate observations with the LAD. The definition of the X-ray sources required as input for the simulations is done via the SIMPUT format. On this poster we present the general setup of the simulation software and show an analysis of the timing performance of the LAD as an example illustrating its capabilities.	084
Poster	Schwarm	erla	de	Monte-Carlo Modeling of Cyclotron Resonant Scattering Features	Cyclotron resonant scattering features (CRSFs) exhibit the fundamental physical processes in the line forming region of highly magnetized neutron stars and allow for a direct measurement of the neutron star's magnetic field. The multiplicity of CRSFs seen in many sources - with 4U 0115+63 being the record holder showing a fundamental line plus 4 harmonics - and the complex shape of the fundamental line provide much more information than just the central energy of the excitation to another Landau level. The strong coupling of a photon's angle and energy due to relativistic effects are leading to a coupling of the input spectrum and the accretion geometry and therefore hinder comprehension. The model presented here is using a Monte-Carlo approach to the problem by propagating individual photons through different kinds of cyclotron resonant scattering media. From a basic hollow cylinder geometry all kinds of cylindrical symmetrical accretion geometries can be modeled by stacking multiple hollow cylinders on top of or within each other. This way radial gradients are possible as well as gradients in height providing sufficient complexity to model realistic accretion columns. Besides the generation of spectra, the software presented here is capable of producing tables allowing the fast creation of output spectra by a convolution of the input continuum with the corresponding Green's functions. An XSPEC implementation of this model and an initial set of tables is now available to the community that allows for conclusions to be drawn about the accretion geometry from observed CRSFs.	066
Poster	Servillat	ceas	fr	Herschel views on ultra-luminous X-ray sources	The nature of ultra-luminous X-ray sources (ULXs), which are off-nuclear extragalactic X-ray sources that exceed the Eddington luminosity for a stellar-mass black hole, is still largely unknown. They might be black hole X-ray binaries in a super-Eddington accretion state, possibly with significant beaming of their emission, or they might harbor a black hole of intermediate mass (100 to 10 ⁵ solar masses). Due to the enormous amount of energy radiated, ULXs can have strong interactions with their environment, particularly if the emission is not beamed and if they host a massive black hole. We will present early results of a project that uses Herschel PACS infrared observations of 20 galaxies hosting bright ULXs (> 10 ⁴⁰ erg s ⁻¹) at less than 40 Mpc in order to constrain the nature of the environment surrounding the ULXs and possible interactions. This will allow us to test the similarities with the environment of Galactic high mass X-ray binaries. This project will also shed light on the nature of the host galaxies, and the possible factors that could favor the presence of a ULX in a galaxy.	102
Poster	Sguera	inafb	it	INTEGRAL study of the candidate SFXT IGR J18462-0223	The Galactic Plane monitoring performed by the INTEGRAL/IBIS instrument led to the discovery of a new sub-class of supergiant high mass X-ray binaries named as Supergiant Fast X-ray Transients (SFXTs). One of the main aims of the current studies on SFXTs is to collect detailed spectral/temporal information on poorly known candidate SFXTs, in order to confirm their nature and so increase the sample of known firm objects. This is mandatory for a population study, e.g. to establish if SFXTs are an homogeneous class or display a variety of different X-ray characteristics. In this context, we present a comprehensive hard X-ray study with INTEGRAL of the poorly known candidate SFXT IGR J18462-0223, during both the out-of-outburst and flaring state. The results will be also discussed in a broad band X-ray context.	067
Poster	Sidoli	inaf	it	The Supergiant Fast X-ray Transient with the shortest orbital period: Suzaku observes one orbit in IGR J16479-4514	We present an analysis of the unique eclipsing Supergiant Fast X-ray Transient (SFXT) IGRJ16479-4514, based on a long Suzaku observation which, for the first time, spans as continuously as possible a very large fraction (80%) of the short orbital period (3.3 days). The long observation allowed us to perform an unprecedented monitoring of the evolution of the spectral parameters along one single orbit of the SFXT with the shortest orbital period. The average XIS spectrum is highly absorbed and displays a power-law like shape (photon index of 1.3), together with an emission line from cold iron, likely produced in the supergiant wind. The soft X-ray light curve shows variability with a dynamic range of about two orders of magnitude, with the lowest intensity level consistent with the times of the eclipse. Two X-ray flares with a duration of 10-15 ks are present. We discuss the spectral and temporal results in the framework of the different models proposed to explain the SFXTs extreme variability behavior.	033

Poster	Soldi	cea	fr	In-flight calibration of the INTEGRAL/IBIS mask	Since release 9.0 of the INTEGRAL Offline Scientific Analysis (OSA) software, the ghost buster module has been introduced in the IBIS imaging procedure. This module excludes in the deconvolution process the detector pixels corresponding to the projection of a bright source through mask elements affected by some defects (and therefore not correctly modeled), leading to an improvement of the sensitivity around bright sources up to a factor of 7. These unmodeled defects are most likely associated with screws and inserts holding the mask, with potting filling the inserts, and with glue at the mask borders. Following these major improvements introduced by OSA 9, a second order correction is still required to further remove the residual noise, now at a level of 0.2–0.4% of the source. In order to refine the mask excluded areas minimizing the rejected signal, a calibration campaign of the IBIS mask has been carried out during the recent years making use of dedicated Crab observations and of additional scientific observations of the Cygnus region. We present here the analysis of these observations and the investigation of the origin of the residual noise in the IBIS/ISGRI images.	043
Poster	Tramacere	isdc	ch	gamma-ray DBScan: a DBScan-based clustering algorithm applied to the detection of gamma-ray sources: application to the Fermi-LAT data	We propose for the first time the application of the DBScan, a topological density based clustering algorithm, to the detection of gamma-ray sources. Given the discrete topological nature of gamma-ray images, topological methods minimize the impact of the poor energy-dependent Point Spread Function (PSF), typical of gamma-ray telescopes, preserving the spatial information of each event. Compared to other topological methods, the DBScan has the advantage to embed inside the algorithm itself the discrimination between signal (cluster) and background (noise), according to the local density of events within a typical scanning brush. We give a statistical characterization of this algorithm, using as benchmark a sample of simulated sources, and we evaluate the performance of the method in terms of positional accuracy, cluster reconstruction, spurious rate, and cluster significance. Finally we apply the method to real Fermi-LAT data, with excellent results.	056
Poster	Tsygankov	finca	fi	INTEGRAL/SPI view of the diffuse gamma-ray emission from the Milky Way	We present results of extensive analysis of diffuse emission from the Milky Way using data obtained with SPI spectrometer onboard INTEGRAL observatory during 10 years of operating at the orbit. The origin and properties of this emission in hard energy range is still under debates. We study properties of the diffuse emission in the most interesting spectral region of a transition from emission of unresolved compact objects (Galactic X-Ray Ridge emission) to truly diffuse emission at 100 keV and up to a few MeV. To place strong constraints on the morphology and energy spectrum shape of the Galactic diffuse emission the data during specially performed latitude scans were used.	023
Poster	von Kienlin	mpe	de	eROSITA on-board Spectrum-RG	eROSITA will be the primary instrument on-board the Russian "Spectrum-Roentgen-Gamma" (SRG) satellite which will be launched from Baikonur in 2014 and placed in an L2 orbit. It will perform the first imaging all-sky survey in the medium energy X-ray range up to 10 keV with an unprecedented spectral and angular resolution. The poster will present the eROSITA instrument and the main scientific goals of the mission.	156
Poster	von Kienlin	mpe	de	The Fermi GBM Gamma-Ray Burst Catalog: Year Three & Four	The Fermi Gamma-ray Burst Monitor (GBM) has triggered on 959 cosmic gamma-ray bursts in the first four years since trigger enabling on July 12, 2008. The year three and four gamma-ray burst catalog, the 2nd GBM GRB catalog currently in preparation, will continue the first catalog (Paciesas et al. 2012), which already includes 491 GRB events. It will summarize the basic characteristics of the triggered GRBs, like sky location, duration, peak flux and fluence. An analysis of these quantities of the now larger GRB sample will be presented. This catalog will be an official product of the Fermi GBM science team, and the data files containing the complete results will be available from the High-Energy Astrophysics Science Archive Research Center (HEASARC).	157
Poster	Walter	isdc	ch	INTEGRAL and others Angels in the HEAVENS	High-energy astrophysics space missions have pioneered and demonstrated the power of legacy data sets for generating new discoveries, especially when analyzed in ways the original researchers could not have anticipated. HEAVENS provides analysis services for a number of recent and important high-energy missions. These services allow any user to perform on-the-fly data analysis to produce straightforwardly scientific results for any sky position, time and energy intervals without requiring mission specific software or detailed instrumental knowledge. The ultimate goal is to ensure that the data of the present instruments can be effectively used by everyone and everywhere for the decades to follow.	116
Poster	Walter	isdc	ch	A Tidal Disruption Event detected by INTEGRAL	INTEGRAL detected a huge flare of a Seyfert 2 galaxy with no previously known X-ray emission. Follow-up X-rays observations and multi wavelength archive data indicate that the mass of the central black hole is smaller than that of Sgr A*. The X-ray variability of a factor 1000 and the duration of the flare indicate the likely tidal disruption of a star by the central black-hole. The peak luminosity does not exceed the Eddington luminosity, i.e does not require beaming. Many other such events could be hidden in the INTEGRAL archive. Such an event on Sgr A* would lead to a flux larger than 30 Crab.	120

Poster	YuPeng	ihep	cn	OUTBURSTS AND BURSTS OF IGR J17473-2721	<p>The 2005 and 2008 outburst of the atoll source IGR J17473–2721 was observed by INTEGRAL, RXTE and Swift. Tens of type-I X-ray bursts were found in this outburst. We have published 4 papers on IGR J17473-2721: 1. The flux of the latter outburst rose in ~one month and then kept roughly constant for the following ~two months. During this time period, the source was in a low/hard state. The source moved to a high/soft state within the following three days, accompanied by the occurrence of an additional outburst at soft X-rays and the end of the preceding outburst in hard X-rays. During the decay of this soft outburst, the source went back to a low/hard state within 6 days, with a luminosity 4 times lower than the first transition. This shows a full cycle of the hysteresis in transition between the hard and the soft states. The fact that the flux remained roughly constant for ~two months at times prior to the spectral transition to a high/soft state might be regarded as the result of balancing the evaporation of the inner disk and the inward accretion flow, in a model in which the state transition is determined by the mass flow rate. Such a balance might be broken via an additional mass flow accreting onto the inner disk, which lightens the extra soft outburst and causes the state transition. However, the possibility of an origin of the emission from the jet during this time period cannot be excluded. The spectral analysis suggests an inclined XRB system for IGR J17473-2721. Such a long-lived preceding low/hard state makes IGR J17473-2721 resemble the behavior of outbursts seen in black hole X-ray binaries like GX 339-4. 2. Eighteen type-I X-ray bursts were found from IGR J17473-2721: two from the outburst in 2005 and the other 16 from the recent outburst in 2008. Among them, 3 bursts show photospheric radius expansion (PRE). The distance to the source is estimated as 6.4 kpc with a 15% uncertainty based on the three bursts that show PRE. In the recent outburst, there are 6 bursts showing up in the low/hard state prior to the state transition to a high/soft state, 3 bursts at the end phase of the high/soft state, and 7 in the following low/hard state. The blackbody radius of these bursts presents a variety of interesting features. We find that, at the end of the recent outburst, the profile of the blackbody radius is anti-correlated with the blackbody temperature and the burst flux. The durations of the type-I burst are found to correlate with the Eddington ratio and to have two parallel evolution groups. Along the decreasing Eddington ratio, the burst duration decreases and ends in each group the PRE bursts occurred. This provides new clues to the type-I bursts in the context of outbursts for atoll XRBs. 3. We find that the joint INTEGRAL, RXTE and Swift energy spectrum can be well fitted with a model composed of a blackbody and a cutoff power-law, with a cutoff energy decreasing from ~150 keV to ~40 keV as the source leaves the quiescent state toward the low hard state. This fits into a scenario in which the corona is cooled by the soft X-rays along the outburst evolution, as observed in several other atoll sources. Fifty-seven type-I bursts were reported in the 2008 outburst of IGR J17473–2721. By using the flux measured in the 1.5–30 keV band, we find that the linear relationship between the burst duration and the flux still holds for those bursts that occur at the decaying part of the low hard state, but with a different slope than the overall one that was estimated with the bursts happening in the whole extent of, and for the rest of the low hard state. The significance of such a dichotomy in the type-I X-ray bursts is ~3s under an F-test. Similar results are hinted at as well with the broader energy-band that was adopted recently. This dichotomy may be understood in a scenario where part of the accreting material forms a corona on the way of falling onto the surface of the neutron star during the decaying part of the low hard state. Based on the accretion rates of the preceding LHS, estimated from type-I X-ray bursts and from persistent emission, at least for IGR J17473-2721, most of the accretion material may fall on the neutronstar (NS) surface in the LHS. Considering the burst behavior in the context of the outburst indicates a corona formed on top of the disk rather than on the NS surface. 4. The coronae in X-ray binaries (XRBs) still remain poorly</p>	127
Poster	Zhang	mpe	de	INTEGRAL/SPI and Fermi/GBM Observation of the 2012 March 7th Solar Flares	<p>We present gamma-ray observations of the X5.4 and X1.3 solar fares on 2012 March 7. The GOES X5 are commenced at 00:02 UT and was followed by the X1 are an hour later. The entirety of both fares was detected by INTEGRAL/SPI, whereas the Fermi/GBM observed the falling phase of the X5 and entirety of the X1 flare. The 2.2 MeV neutron capture line is very prominent in both flares as observed by SPI. We performed Monte Carlo simulation to obtain the response of the SPI matrix in such non-standard con guration, so as to calculate the flux of the 2.2 MeV line measured with SPI. Our preliminary study indicates that the SPI and Fermi/GBM 2.2 MeV fluxes for the X1 are agree with each other within uncertainties. The GBM also observed nuclear de-excitation lines from the X1 flare. This allows an estimate of the are-accelerated ion spectrum that produces the gammarays. The Fermi LAT observed >100 MeV gamma-rays during the falling phase of the X5.4 flare, the X1.3 flare, and for a total of 20 hours. We discuss what we can learn from a joint analysis of the nuclear and highenergy observations.</p>	016
Poster	Ziolkowski	camk	pl	Determination of the masses of the components of the HDE 226868/Cyg X-1 binary system	<p>Recent determination of the distance to HDE 226868/Cyg X-1 binary system (Reid et al., 2011) and more precise determination of the effective temperature of HDE 226868 (Caballero-Nieves et al., 2009) permit a more accurate estimate of the masses of both components. Using up to date evolutionary models, I obtain about 27 Msun for the mass of the supergiant and about 16 ± 3 Msun for the mass of the black hole. Accepting rather liberal estimates of uncertainties in both the distance and the effective temperature, one gets ranges of 21 to 35 Msun and 10 to 23 Msun for both masses, respectively. The obtained mass of black hole agrees with the value 15 ± 1 Msun suggested by Orosz et al. (2011). However, the value suggested by them for the mass of the supergiant (19 ± 2 Msun) is wrong since it violates the mass-luminosity relation for the the massive MS stars (this relation was ignored in the iterative process of Orosz et al.).</p>	135

Validating the Bayesian event reconstruction and selection approach with measurements of the Crab pulsar and nebula with NCT and COMPTEL

Analyzing data from Compton telescopes exposed to the space radiation environment faces two challenges, determining the correct ordering of the interactions of the incoming particles and determining if the event originated from a source photon or from background such as from Earth's Albedo, cosmic rays, or detector activation. Both questions can be answered using Bayesian model selection approaches. The measured Compton interaction information is parameterized in two slightly different multi-dimensional data spaces, which contain the interaction information of the Compton sequence (such as energies, redundant scatter angles, time-of-flight, polarization) as well as geometric information of the detector (such as absorption probabilities). Both Bayesian data spaces are populated using Monte-Carlo simulations of the measurement environment, which should resemble the real scenario as close as possible. The simulation truth is used to sort the sequences and to determine if the photon is due to background. Finally, the results can be used during list-mode-likelihood image reconstruction by weighting the events by their probability of originating from a good source photon to further improve the resulting image. In the presentation we will explain the approach and show results applying the method for the first time to real measurements of the Crab pulsar and nebular with the Nuclear Compton Telescope (NCT) and archival data of COMPTEL.