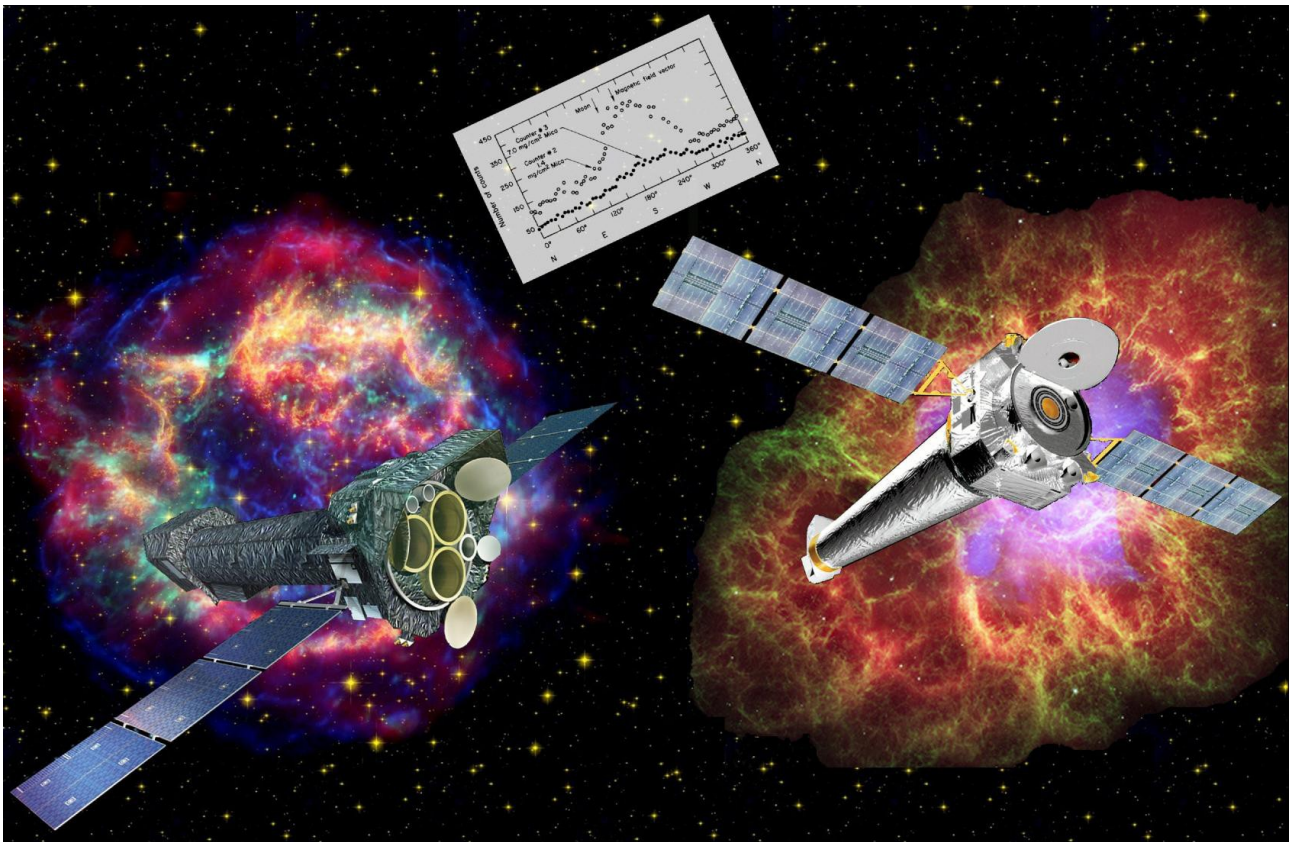

X-ray Astronomy: towards the next 50 years!

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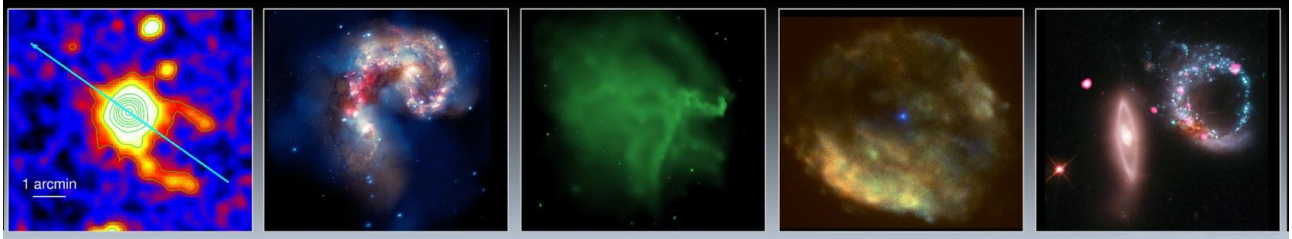

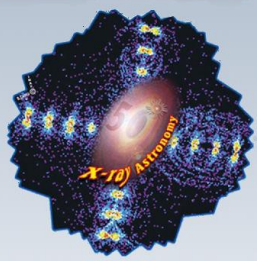

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ADDENDUM ABSTRACT BOOKLET

POSTER 1
Authors: Nucita A.A., De Paolis F., Saxton R., Read, A. M et al.

The high energy view of NGC 6388.

Abstract: The optical brightness surface density of the globular cluster NG6388 suggests that it may harbor a central intermediate-mass black hole with mass of about $6x10^3$ solar masses. Such a massive black hole is expected to be very active and, as a consequence, NGC 6388 was the target of several high-energy and radio observational campaigns in the X-ray and radio bands. We review the past observational campaigns which allowed to set limits on the BH mass. Recently, the interest in NGC 6388 raised again since a new high energy transient (IGRJ17361-4441) was observed by the INTEGRAL satellite. The source, close to the center of gravity of the globular cluster, became the target of follow-up observations conducted by the Chandra, Swift/XRT and RXTE observatories. Here, we concentrate on a set of observations conducted by the XMM-Newton satellite during two slews and address some conclusions about the possible IMBH nature of the source.

POSTER 2
Authors: Nucita A.A., Manni L., De Paolis F., D. Vetrugno and G. Ingrosso

High energy search for intermediate mass black holes in close dSph milky way satellites.

Abstract: We report the results of the analysis on XMM-Newton and Chandra observations of some dwarf MW satellites (Fornax, Leo T and Ursa Minor) with the aim to fully characterize the X-ray source population (in most of the cases background active galactic nuclei) detected towards the targets. In some cases, a few sources are found to be associated to the galaxies. We also searched for intermediate mass black holes (in the mass range 10^3-10^4 Msun) expected to be hosted in the center of the targets. We can not firmly establish the existence of an X-ray counterpart of the putative black holes and put only constraints on the accretion parameters.

POSTER 3
Authors: Civitani, S. Campana, O. Citterio, P. Conconi, G. Pareschi, G. Tagliaferri, G. Parodi

High angular resolution optics for the next generation of Wide Field X-Ray telescopes beyond E-Rosita.

Abstract: The next generation wide-field X-ray telescopes (WFXT), to be implemented beyond eRosita, will require an angular resolution of 5-10 arcsec constant across a wide field of view (1 deg^2 diameter). To achieve this goal the design of the optical system has to be based on nested modified grazing incidence Wolter-I mirrors, realized with polynomial profiles, focal plane curvature and plate

scale corrections. This concept, firstly introduced by Burrows, Burg & Giacconi (1992) and refined at the Brera Observatory (Conconi et al. 2010), guarantees an improved angular resolution at large off-axis angle with respect to the normally used Wolter I configuration. These telescopes are therefore optimal for survey purposes. A significant increase of effective area and grasp with respect to eRosita must also be achieved. This is possible with high precision but at the same time thin (1-3 mm thickness for mirror diameters of 30-110 cm) glass mirror shells. The epoxy replication process with SiC polynomial mirror shells has already been proved to be a valuable technology to meet the angular resolution requirement of 10 arcsec. To achieve the goal of 5 arcsec and improve further the technology, we are considering different materials. Quartz glass (fused silica), a well-known material with good thermo-mechanical and polishability characteristics, could meet our goal in terms of mass and stiffness, with significant cost and time saving with respect to SiC. To bring the mirror shells to the needed accuracy, we are developing a deterministic direct polishing method. This method has already been used for past missions (as Einstein, Rosat, Chandra). The technological challenge now is to apply it for almost ten times thinner shells. Our approach is based on two main steps: i) quartz glass tubes available on the market are grinded to conical profiles, ii) these shells are then polished and shaped to the required polynomial profiles by Computer Numerical Control (CNC) polishing machine. A mission case of a medium-size WFXT based on X-ray two identical mirror modules of 55 nested shells realizated in this way each, with diameter up to 1.1 m, able to achieve a grasp of a grasp > 3500 cm^2 deg^2 at 1 keV and and 800 cm^2 deg2 at 4 keV and a costant HEW of 5 arcsec across the field will be presented. We will present the case of two identical X-ray mirror modules of 55 nested shells with diameter up to 1.1 m, providing a grasp of > 3500 cm^2 deg^2 at 1 keV and of 800 cm^2 deg2 at 4 keV and a costant HEW of 5 arcsec across a field of view of 1 deg in diameter.

POSTER 4

Authors: S. Basso, M. Civitani, O. Citterio, P. Conconi, M. Ghigo,, F. Martelli, G. Pareschi, G. Parodi, L. Proserpio, B. Salmaso, D. Spiga, G. Tagliaferri, A. Zambra

Segmented glass optics for next generation X-ray telescopes.

Abstract: The realization of X-Ray Optical Units, based on the use of slumped thin glass segments to form densely packed modules of plate pairs in a Wolter type I optical design, is under investigation since some years based on a collaboration of the Brera Observatory with MPE and ES. In order to reach the very challenge integration requirements, it has been developed an innovative assembly approach for aligning and mounting the IXO-like mirror segments, making use of glass reinforcing ribs that connect the facets to each-other. One of the more interesting features of the developed integration scheme is that it guarantees an active correction for major existing figure errors. As the glasses are bonded while kept with a vacuum chucks (called integration moulds), they are expected to assume the shape of the mould. In this paper we review the status of the project.

POSTER 5
Authors: Filippo Frontera, University of Ferrara, Ferrara, Italy

Prospects for Gamma-ray Focusing Telescopes beyond 70/100 keV.

Abstract: I will report on the prospects for focusing telescopes in the soft gamma-ray band (>70/100 keV). These telescopes could open a new window in X-ray astronomy. Indeed the current instrumentation is background limited and many issues that could be solved with deep observations in this band are still open. I will also discuss these issues and the scientific prospects of the development activity in Italy devoted to Laue lenses for space astrophysics.

POSTER 6
Authors: R. Camattari; V. Bellucci; V. Guidi; I. Neri

Quasi-mosaicity as a tool for focusing hard x-rays.

Abstract: Crystals having curved diffracting planes (CDP) are very promising for broad-band Laue lens because they allow concentrating X and Î³ rays with high reflectivity. Here we propose the usage of crystals relying on the quasi-mosaic (QM) effect for focusing of hard x-rays at high resolution in a Laue lens. Indeed, with appropriate crystallographic direction, a primary curvature imparted to a crystal results in a secondary (quasi-mosaic) curvature of a different plane direction due to quasi-mosaic effect. Moreover, since the size of the focal spot of the photons diffracted by a QM crystal can be controlled by the secondary curvature, quasi-mosaic crystals allow focusing with very high resolution. Here we show recent experimental result obtained at ILL (Grenoble - France) with a self-standing QM crystal bent with the grooving method. Finally, a Laue lens exploiting quasi-mosaic effect has been simulated.

POSTER 7
Authors: R. Fanali, A. Caccianiga, P. Severgnini, R. Della Ceca, M. Dotti, E. Marchese

The relationship between X-ray emission and accretion in AGNs.

Abstract: We study the link between the X-ray emission in radio-quiet AGNs and the accretion rate on the central supermassive black-hole (SMBH) using a well-defined and statistically complete sample of ~ 150 AGN1 type1 AGN extracted from the XMM-Newton Bright Serendipitous Survey (XBS). To this end, we search and quantify the statistical correlations between the main parameters that characterize the X-ray emission (i. e. the X-ray spectral slope and the X-ray “loudness”, Kbol), and the accretion rate, both absolute (dM/dt) and relative to the Eddington limit (Eddington ratio). The X-ray spectral indices, in the 0.5-10 and 2-10 keV energy bands, have been derived from a systematic spectral analysis (Corral et al. 2011) while the bolometric luminosities have been computed by fitting the optical/UV spectral Energy Distributions (SEDs, Marchese et al. 2012). Finally, the black-hole masses have been obtained from spectral data using the single-epoch method (Caccianiga et al. 2012 in prep). We sum arize and discuss here the main statistical correlations found and their possible implications on current disk/corona models.