IBWS 2017
BOOK OF ABSTRACTS

Contents

Miniaturized X-ray telescope for VZLUSAT-1 nanosatellite with Timepix detector

Tomáš Báča

We present the application of a Timepix detector on the VZLUSAT-1 nanosatellite. This project aims to verify the practicality of the detector in conjunction with 1-D Lobster-Eye optics to observe celestial sources between 5 and 20 keV. A modified USB Lite interface is used for low-level control of the Timepix. An additional 8-bit Atmel microcontroller is dedicated for commanding the detector and to process the data onboard the satellite. We present software methods for onboard post-processing of captured images, which are suitable for implementation under the constraints of the low-powered embedded hardware. Several measuring modes are prepared for different scenarios including single picture exposure, solar UV-light triggered exposure, and long-term all-sky monitoring. Following up VZLUSAT-1 project are NASA sounding rocket experiments. We aim to test a larger telescope (approx. 1 m focal length) together with Timepix detectors. Sounding rockets provide in-situ measurement platform, which allows 5-minute experiments with data recovery. We present results of preliminary experiments conducted at Pennstate University in 50 m long vacuum tunnel.

Fermi GBM transient searches with ADWO

Zsolt Bagoly

We present a new method to search for non-triggered, short-duration transients in the data-set of the Fermi's Gamma-ray Burst Monitor (GBM). The method, called Automatized Detector Weight Optimization (ADWO), combines the data of all available detectors and energy channels, identifying those with the strongest signal. ADWO is ideal to search for electromagnetic (EM) counterparts of gravitational wave (GW) events, when the time of the event is well known from the GW-detectors' observation as well as for identifying non-triggered short gamma-ray bursts (SGRBs). We have successfully identified short GRBS, and possible EM counterparts of GW transients GW150914 and LVT151012.

A Suzaku, NuSTAR and XMM-Newton view on variable absorption and relativistic reflection in NGC 4151

Tobias Beuchert

We disentangle X-ray disk reflection from complex line-of-sight absorption in NGC 4151 using Suzaku, NuSTAR, and XMM-Newton. Extending upon Keck et al. (2015), we develop a physically-motivated baseline model using the latest lamp-post reflection code relxillCp_lp, which includes a Comptonization continuum. We identify two components at heights of 1.2 and 15.0 gravitational radii using a long-look simultaneous Suzaku/NuSTAR observation but argue for a vertically extended corona as opposed to distinct primary sources. We also find two neutral absorbers (one full-covering and one partial-covering), an ionized absorber (logxi = 2.8), and a highly-ionized ultra-fast outflow, all reported previously. All analyzed spectra are well described by this baseline model. The bulk of the spectral variability on time-scales from days to years can be attributed to changes of both neutral absorbers, which are inversely correlated with the hard X-ray continuum flux. The observed evolution is either consistent with changes in the absorber structure (clumpy absorber in the outer BLR or a dusty radiatively driven wind) or a geometrically stable neutral absorber that becomes increasingly ionized at a rising flux level. The soft X-rays below 1 keV are dominated by photoionized emission from extended gas, which may act as a warm mirror for the nuclear radiation.

Deconvolution Algorithm WHIDE for Stellar Globullar Clusters

Martin Blazek

In this talk the results on simulations and data processing based deconvolution is presented. Proposed WHIDE algorithm using Richardson-Lucy deconvolution is useful namely for astrometry and photometry of dense stellar fields such as Globular Clusters.

Small satellite options for astronomy

Noah Brosch

The cubesat philosophy, together with new technological developments, offers interesting possibilities for valuable astronomical investigation while keeping mission costs to a minimum. I will describe work on deployable mirrors that should allow launching mirrors larger than the satellite size, as well as other relatively low-cost solutions for detectors, etc. These in the context of an ultraviolet-imaging nano-satellite.

Long wavelength radio observations of Blazars

Paul Ray Burd

The unification paradigm of AGN suggests that BL Lacs and FSRQs are the counterparts of FR1 and FR2 radio galaxies at low inclination angles and therefore at low radio frequencies, the lobe emission should dominate the beamed flat-spectrum nuclear emission. The low frequency properties of four high-frequency selected beamed blazar jet sources, from the MOJAVE 1 sample, observed with the Giant Metre Wave Radio Telescope (GMRT) at 610 MHz, are shown.

First results from the use of the relativistic and slim disc model SLIMULX in XSPEC

Maria Caballero-Garcia

Ultra-Luminous X-ray sources (ULXs) are accreting black holes for which their X-ray properties have been seen to be different to the case of stellar-mass black hole binaries. For most of the cases their intrinsic energy spectra are well described by a cold accretion disc (thermal) plus a curved high-energy emission components. The mass of the black hole (BH) derived from the thermal disc component is usually in the range of 100-1000 solar masses, which have led to the idea that this might represent strong evidence of the Intermediate Mass Black Holes (IMBH), proposed to exist by theoretical studies but with no firm detection (as a class) so far. Recent theoretical and observational developments are leading towards the idea that these sources are instead stellar-mass BHs accreting at an unusual super-Eddington regime. In this talk we present a model (SLIMULX) that can be used in XSPEC for the fit of thermal spectra of slim discs around stellar mass black holes in the super-Eddington regime, which consistently takes all relativistic effects into account. Finally I will present the results that we have obtained from the fit of the X-ray spectra from NGC5408 X-1.

The THESEUS mission proposed for the M5 program

Alberto J. Castro-Tirado

I wil present the mission concept for THESEUS, proposed for the ESA M5 Call, with a doublefold goal: i) to detect and follow-up gamma-ray bursts in X-rays, optical and near-IR and ii) to conduct a deep survey in the X-ray band.

Miniaturized X-ray telescope CubeSat payload for astrophysics, searching of gravitational waves sources or cometary mining

Vladimír Dániel

The presentation describe the CubeSat idea with x-ray telescope targeting the astrophysics, searching of gravitational waves sources or cometary mining. Even there are three different topics the similarities and possible usage of same instrument will be discussed.

Modelling X-ray beacons in curved space time

Sebastian Falkner

n accreting X-ray pulsars, strong magnetic fields funnel matter onto the magnetic poles of neutron stars forming localized emission regions for beamed X-rays. As the pulsar rotates, very characteristic periodic patterns, so called pulse profiles, are observed, which show a broad range of complexity. Because of the extreme compactness of neutron stars, investigating the information contained in these profiles requires to account for general relativistic effects, like light bending, which can lead to complex and non-intuitive connections between the observed pulse profiles and the intrinsic geometry. We have developed a flexible ray tracing code, which calculates the observed time and energy dependent flux for arbitrary geometry and emission patterns of the emission regions. We present the result of a simultaneous fit of the energy-resolved pulse profiles of 4U 1626-67 (NuSTAR) based on an empirical emission pattern applied to a common two column geometry. We assume the emission pattern to be a mixture of Gaussian-like fan and pencil beam emission, which sufficiently describes the energy evolution of the observed pulse profiles. Further we present a physical accretion column model combining the model from the simulations by Postnov et al. (2015) to obtain seed photon continua produced in the dense inner regions of the accretion column. In a thin outer layer these seed continua are imprinted with cyclotron resonant scattering features calculated using Monte Carlo simulations as described in Schwarm et al. (2017). From these emission patterns we derive the observed phase and energy dependent flux for different geometries using the relativistic ray tracing code and discuss the observational implications.

Recent Advances in the Study of Black Holes using X-ray Reflection Spectroscopy

Javier Garcia

Reflection spectroscopy has proven to be a versatile tool for the study of accreting black holes that allows one to constrain key physical parameters the such as the spin of the black hole; the accretion disk's inner radius, inclination, ionization state and Fe abundance; and, more recently, the temperature, optical depth and geometry of the corona that produces the X-ray emission. This talk is an overview of the state of the field that highlights recent developments and the limitations of the models we use. I will describe a major program now underway aimed at analyzing for a few dozen black holes the thousands of spectra that were collected by NASA's RXTE satellite during its 1996-2012 mission. I will also discuss current outstanding issues in the interpretation of the observational data, such as the large iron abundances frequently required to fit the reflection spectra of both black hole binaries and AGN.

Frontier Research in Astrophysics - An Updated Review

Franco Giovannelli

In this paper – a short updated version of our review paper about 'The impact of space experiments on our knowledge of the physics of the Universe' (Giovannelli & Sabau-Graziati, 2004) (GSG2004) and subsequent updating (Giovannelli & Sabau-Graziati, 2012a, 2014a) - we will briefly discuss old and new results obtained in astrophysics, that marked substantially the research in this field. Thanks to the results, chosen by us following our knowledge and feelings, we will go along different stages of the evolution of our Universe discussing briefly several examples of results that are the pillars carrying the Bridge between the Big Bang and Biology. We will remark the importance of the joint venture of 'active physics experiments' and 'passive physics experiments' ground- and space-based either big either small in size that, with their results, are directed towards the knowledge of the physics of our universe. New generation experiments open up new prospects for improving our knowledge of the aforementioned main pillars.

The intermediate polar nature of the cataclysmic variable SS Cygni

Franco Giovannelli

The classification of SS Cyg as a dwarf nova (DN), a subclass of non-magnetic (NM) cataclysmic variable (CV) has been considered by most of the community well established because of a paper appeared in Nature (Bath & van Paradijs, 1983), that was a bandwagon for all the papers discussing SS Cyg behaviour both from experimental and theoretical points of view, until nowadays in spite of the many arguments and circumstantial proofs about its possible intermediate polar nature, as claimed by Franco Giovannelli's group since more than 30 years. The goal of this paper is to objectively discuss about the controversial nature of SS Cyg by using all the different interpretations of its multifrequency data in order to demonstrate undoubtedly its intermediate polar nature.

Time lag between low energy and high energy processes in cosmic sources

Franco Giovannelli

In close binaries with accretion disks, the time lag between high energy and low energy flashes is connected with effects of viscosity that define a radial motion of matter in the accretion disk. In AGN flashes, the infalling matter has a low angular momentum, and the time lag is defined by the free-fall time to the gravitating center. In this paper we will discuss quantitative models developed for galactic and extragalactic accreting sources.

Simultaneous NuSTAR - XMM-Newton observations of AGN

Andrea Gokus

Joint X-ray observations of the satellites XMM-Newton and NuSTAR have become the main tool to study the 6.4 keV iron K alpha line emission in the direct environment of black holes. The soft (XMM-Newton) and hard (NuSTAR) X-ray spectra together allow determining the continuum, absorption, reflection and emission lines. In order to get better results in the future, the present study aims to help improving the cross-calibration by analyzing all publicly available simultaneous NuSTAR – XMM-Newton observations with good Signal-to-Noise Ratio in a coherent way.

Astrophysical payloads for cubesatellites

Rene Hudec

Astrophysical payloads for cubesatellites will be discussed

IBWS Introduction and Historical Background

Rene Hudec

IBWS Introduction and Historical Background will be given

JEUMICO Czech Bavarian Astronomical X Ray Optics Project

Rene Hudec

JEUMICO, the Czech Bavarian Astronomical X Ray Optics Project will be shortly presented

Mini-MegaTORTORA wide-field monitoring system with sub-second temporal resolution: observation of transient events

Sergey Karpov

Here we present the summary of first years of operation and the first results of a novel 9-channel wide-field optical monitoring system with sub-second temporal resolution, Mini-MegaTORTORA (MMT-9), which is in operation now at Special Astrophysical Observatory on Russian Caucasus. The system is able to observe the sky simultaneously in either wide (900 square degrees) or narrow (100 square degrees) fields of view, either in clear light or with any combination of color (Johnson-Cousins B, V or R) and polarimetric filters installed, with exposure times ranging from 0.1 s to hundreds of seconds.The real-time system data analysis pipeline performs automatic detection of rapid transient events, both near-Earth and extragalactic. The objects routinely detected by MMT also include faint meteors and artificial satellites.

Plunging neutron stars as origin of organised magnetic field in galactic nuclei

Vladimir Karas

Black holes cannot support their own internal magnetic field like, for example, compact stars can. Despite this fact observations indicate that event horizons of supermassive black holes (SMBH) are threaded by field lines along which plasma streams flow. Various magnetohydrodynamical mechanisms have been suggested to generate turbulent magnetic fields on small scales, however, the origin of the large-scale component is unclear. We propose that dipole-type magnetic fields can be brought onto SMBH by magnetised neutron stars, which are expected to drift inward from a hidden population in the Nuclear Star Cluster.

Blazars as Potential High-Energy Neutrino Sources

Michael Kreter

Jets from Active Galactic Nuclei (AGN) are among the best candidates for the recently detected extraterrestrial neutrino flux. Specifically, gamma-ray blazars have been predicted to yield a cumulative neutrino signal exceeding the atmospheric background above energies of 100 TeV, assuming that both the neutrinos and the gamma-ray photons are produced by accelerated protons in relativistic jets. Hadronic AGN jet emission models predict a tight correlation between the neutrino flux and the time-variable gamma-ray emission but most very short flares on time scales of days or less can only yield a very small fluence, greatly reducing the probability of a neutrino detection as compared to longer high-fluence outbursts on time scales of months to years. Thus, only the absolute brightest short blazar flares provide a significant probability for a direct neutrino blazar-flare association based on timing arguments. We present a strategy to search for the most promising blazar-flare candidates using time-resolved multiwavelength SEDs.

Pico-Satellite Formations in Würzburg

Ilham Mammadov

Foremost, the current state of the missions within ZfT will be presented. As a research institute, ZfT is involved in realizing several satellite missions based on the low-cost but highly reliable CubeSat platforms. Combining small satellite platforms and formation flying techniques make previously impracticable satellite missions feasible. Formation techniques and reliable on-board electronics design based on COTS components are considered to be a key enabler in many fields of space observation including astrophysics.

eASTROGAM

Karl Mannheim

The eASTROGAM mission concept, currently under study by ESA in the frame of the M5 call for proposals, will be presented. The mission goal is an all-sky MeV gamma-ray telescope with imaging, spectroscopic, and polarimetric observation capabilities across a broad band. eASTROGAM combines a double-sided Silicon strip tracker, a pixelated calorimeter, and an anti-coincidence dome. This mission will be key to understand AGN and other phenomena related to compact objects and their high-energy emissions.

Recent outburst activity of the supersoft X-ray binary AG Draconis

Jaroslav Merc

AG Dra is a bright symbiotic binary consisting of a white dwarf and a pulsating cool giant. Moreover, it is the most intense X-ray source among symbiotic stars, and one of the best representatives of the supersoft X-ray objects. The system undergoes characteristic symbiotic activity with alternating quiescent and active stages. The active ones consist of several outbursts repeating at about a one-year interval. Using UV and X-ray observations, González-Riestra et al. (1999) showed that there are two types of outbursts: cool and hot ones. In our recent paper (Leedjärv et al. 2016) we demonstrated that the outbursts of AG Dra can be clearly distinguished also according to behavior of the prominent optical emission lines. In the presentation, recent outburst activity of AG Dra will be discussed.

Development and tests of novel X-ray optical system for space applications

Ladislav Pína

This work addresses the issue of X-ray monitoring for astrophysical applications. A novel approach based on the use of 1D and 2D 'Lobster eye' optics in combination with Timepix X-ray detector in the energy range 3 - 40 keV was proposed. Such wide-field optical system has not been used in space yet. Designed wide-field optical system combined with Timepix X-ray detector is described together with experimental results obtained during laboratory tests. Proposed project includes theoretical study and a functional sample of the Timepix X-ray detector with multifoil wide-field X-ray 'Lobster eye' optics. Using optics to focus X-rays on a detector is the only solution in cases where intensity of impinging X-ray radiation is below the sensitivity of the detector, e.g. while monitoring astrophysical objects in space, or phenomena in the Earthś atmosphere. The optical system is considered to be used in a student rocket experiment. Keywords: X-ray optics, multifoil optics, Lobster Eye, Timepix detector, CubeSat, rocket experiment

Development and characterization of Ir-based coatings for thin X-ray mirrors

Anne-Catherine Probst

Astronomical X-ray sources are investigated using grazing incidence angle telescopes. To fulfill the mass constraints of future launchers, light-weight X-ray telescopes have to be realized. One possibility is to use thin X-ray mirrors with a reduced thickness of several hundred microns. A coating with a reflective high Z-material is usually applied on the surface of X-ray mirrors to enhance their reflectivity. At the Aschaffenburg University of Applied Sciences a reflective coating for thin X-ray mirrors is under development. It is based on a thin iridium film since the reflectivity of bulk iridium is quite high for photon energies below 10 keV. However, the developed iridium coatings have to depict simultaneously a high reflectivity and a low coating stress to avoid undesirable deformation of the mirror. Investigations on the correlations between the coating properties and the expected performance of the mirror will be presented. The works are performed within a cooperation of the Aschaffenburg University of Applied Sciences (Germany) and the Max-Planck-Institute for Extraterrestrial Physics (Germany) (INTRAAST project 'Industry transfer of astronomical mirror technologies') and within a Bavarian-Czech cooperation with the Czech Technical University in Prague on the development of X-ray mirrors (JEUMICO project 'Joint European Mirror Competence').

Galactic and extragalactic hydrogen in the X-ray spectra of GRBs

Istvan Racz

X-ray spectra of GRB show several hydrogen component in the Milky Way, in the intergalactic space, and in the host galaxy. Interpreting the X-ray spectra we need a precise galactic foreground correction. One can estimate the galactic foreground from spectroscopic measurements, using dust extinction maps, or all-sky hydrogen survey data. We estimated the galactic hydrogen column density from AKARI Far-Infrared Surveyor observations and Planck Av maps. We compare the results with other measurement, like LAB HI survey or Schlafly et al galactic dust extinction estimation for members of the Giant GRB ring.

VLA observations of TANAMI-selected blazars

Jonas Ringholz

According to the unification model of active galactic nuclei, Bl Lac objects are considered to be the beamed and rotated counterparts of FR 1 galaxies and flat spectrum radio quasars the beamed and rotated counterparts of FR 2 galaxies. The radio luminosity and the extended emission of TANAMI-selected blazars are studied, analyzing 1.4 GHz and 4.5 GHz archival VLA data.

SpaceIL - Landing the First Israeli Spacecraft on the Moon

Diego Saikin

SpaceIL is the only Israeli team participating in international Google Lunar XPRIZE competition: a modern race to the Moon. Founded by 3 young engineers at the end of 2010, SpaceIL is aiming to make history and land the first Israeli spacecraft on the Moon, inspiring a generation along the way.

GMRT image of PKS2155-304 at 1.4GHz

Michael Seeg

Archival data from the Giant Metrewave Radio Telescope (GMRT) of PKS2155-304 at 1.4GHz is presented. With a resolution of 3.91x2.86 arcsec new insights of the extended emission of this source can be obtained. Active galactic nuclei (AGN) form highly relativistic particle jets by accreting matter onto a super massive black hole. If the angle to the line of sight to such an object is small, these objects are referred to as blazars, which ususally show a flat spectrum in the GHz regime due to the dominance of beamed core emission. By observing in the MHz regime, unbeamed, extended emission become optically thin and allow to study the morphology of the extended structures and the ratio of luminosity emitted by them and the core structure.

Perspectives of the lobster-eye telescope: The promising types of cosmic X-ray sources

Vojtech Simon

We show the astrophysical aspects of observing the X-ray sky with the planned lobster-eye telescope. This instrument is important because it is able to provide wide-field X-ray imaging. For the testing observations, we propose to observe X-ray binaries (mostly persistent sources) in which matter transfers onto the compact object (mostly the neutron star). We show the typical X-ray spectra and the features of the long-term activity of such objects. Observing in the soft X-ray band is the most promising because the X-ray intensity is the highest in this band. Since these X-ray sources tend to accumulate toward the center of our Galaxy and in the vicinity of the galactic plane, we show that it is sufficient to monitor these areas.

REX - Rocket X-ray experiment

Veronika Stehlikova

An X-ray telescope planned for a rocket experiment. State of works, background and possible targets of observations during the mission.

BART & D50: wide future

Jan Strobl

We would like to shortly introduce autonomous robotic telescopes in Ondřejov Observatory in actual configuration and also discuss intended future changes and advances.

How may GRBs form? An overview of progenitor theories

Dorottya Szécsi

The origin of GRBs is still an actively studied subject. On one hand, we have been collecting more and more observationally constrained properties of GRB-physics. On the other hand, new theoretical results on the progenitor evolution (be it stellar or compact object) have also emerged. My talk is a review of the existing progenitor models for both long-duration and short-duration GRBs. I will discuss their potentials and limitations, putting them in the context of recent observational discoveries.

Earth's thermal radiation sensors in attitude determination systems of small satellites

Ivo Vertat

Attitude determination of satellites could be very complex issue with expensive hardware and software solutions including camera star trackers, two axis sun sensors, earth horizon detectors, magnetometers with Kalman filtering and model of earth magnetic field, etc. Moreover, it could spend the most of resources (volume, mass, electric power) on small satellites like CubeSats. One of potentially interesting type of sensors for attitude determination systems in small satellites could be detectors of infrared thermal emission. Nowadays, these sensors are widely used in contactless thermometer and thermo-cameras resulting in low-cost of this technology. Infrared thermal sensors can be used for rough determination of small satellite orientation on LEO due to close proximity of relatively warm Earth's disc.

Gamma-rays from binaries

Andrzej ZDZIARSKI

I will review the current status of gamma-ray observations from different types of interacting binaries. I will discuss, in particular, new results on Cyg X-1 and Cyg X-3.

Geometry of X-ray sources in accreting black-hole binaries

Andrzej ZDZIARSKI

Accreting binary stellar systems containing black holes and low-mass donors are transient, i.e., they outburst after a period of quiescence, and those with high-mass donors are persistent. Both of them exhibit two main luminous states, spectrally soft and hard. Their X-ray spectra in the soft and hard states are dominated by blackbody emission of accretion discs peaking around 1 keV, and by a component peaking around 100 keV from Compton scattering by mildly relativistic electrons, respectively. There is a general consensus about the nature of the soft state, in which an optically thick accretion disc emitting blackbody radiation extends down to the innermost stable circular orbit (ISCO) around the black hole. However, there is currently a heated controversy regarding the nature of the hard state. According to a long-dominant paradigm, the accretion disc in this state is truncated at a radius >> ISCO and replaced by a hot flow emitting hard X-rays. This explains many observed phenomena, e.g., spectral and variability differences between the states and transition to the hard state from quiescence (when the disc is certainly truncated) in transients. On the other hand, there have been numerous claims that the disc extends to ISCO also in the hard state, and the hard X-ray source is located on the black-hole rotation axis and very close to the horizon (a 'lamppost'). I will discuss both the theoretical and observational arguments for the disc truncation and against the 'lamppost' geometry.

Biomimetics and Astronomical X Ray Optics

Rene Hudec

Biomimetics and Astronomical X Ray Optics will be shortly discussed

Searching for isolated stellar-mass black hole candidates by analyzing the kinematics of their former companions in disrupted binary systems.

Sergey Karpov

We performed a search for isolated stellar-mass black hole candidates based on the fact that more than 50% of radio pulsars have originated in binary systems, now disrupted, where the other component could have evolved into a black hole prior to the second supernova event in the system which caused its disruption. To this end, several relatively young isolated pulsars with known parallaxes fitting the selection criteria were traced back to their presumed birth locations. These areas were then analyzed for possible black hole candidates based on the astrometric, photometric, and spectral data available. We present the results for the first 4 pulsars in our sample, J0139+5814, J0922+0638, J0358+5413, and J1395+1616. Several possible candidates were selected for further analysis.

Lobster eye: Data processing from two 1D modules

Ondrej Nentvich

This poster talks about mathematically combination two 1D modules of Lobster eye type optics, problematics of reconstruction when more than one source is taken. In the case of multiple sources taken by 1D modules, imaginary sources are made by postprocessing. It is necessary to find out which sources are real and which not.

Variable stars and how to find them

Filip Novotný

Past few months iźve been working on software for variable star detection from D50 telescope at astronomical institute of the czech academy of sciences. I'll present on my poster how the software works and what has it found.

Instrumental characterisation of ASI 1600 CMOS camera

Petr Skala

Linearity and other parameters will be presented As well as usability for astronomical use will be discussed.

Implementation of lobster eye optics to QSOFT software package

Vladimír Tichý

QSOFT package represents a general tool for simulation of x-ray optics. The program code is based on sequential ray tracing algorithm. Currently simulation of lobster eye optics is being implemented and tested. Examples of results and their comparison to results of simplified ray tracing algorithm are presented.

Detection of X-ray spectra and images

Martin Urban

X-ray monitoring for astrophysical applications mainly consists of two parts - optics and detector. The poster shows an approach based on a combination of Lobster Eye optics with Timepix detector.

Tomáš Báča - Czech Technical University in Prague
Zsolt Bagoly - Konkoly Observatory, MTA CSFK
Tobias Beuchert - Dr. Remeis Observatory & ECAP
Martin Blazek - Czech Technical University
Noah Brosch - Tel Aviv University
Paul Ray Burd - Uni Würzburg
Maria Caballero-Garcia - ASU-CAS (Prague)
Alberto J. Castro-Tirado - IAA-CSIC
Vladimír Dániel - Aerospace research and test establishment
Sebastian Falkner - Dr. Karl Remeis Observatory & ECAP
Javier Garcia - Caltech & Dr. Karl Remeis Observatory
Franco Giovannelli - INAF-Istituto di Astrofisica e Planetologia Spaziali
Andrea Gokus - Dr. Karl Remeis Observatory & ECAP
Rene Hudec - CVUT & ASU AV CR
Adolf Inneman - Czech Technical University
Martin Jelínek - ASÚ AV ČR
Vladimir Karas - Astronomical Institute
Sergey Karpov - Special Astrophysical Observatory, Russia
Petr Kobrle - Masaryk University
Michael Kreter - University of Wuerzburg
Ilham Mammadov - ZfT - Zentrum für Telematik
Karl Mannheim - Universität Würzburg, Germany
Veronika Maršíková - Czech Technical University
Jaroslav Merc - Pavol Jozef Šafárik University in Košice
Ondrej Nentvich - Czech Technical University in Prague
Filip Novotný - Gymnázium Jihlava/Astronomical Institute of Czech Academy of Sciences
Filip Oliva - AV
Petr Páta - FEE CTU in Prague
Ladislav Pína - Rigaku Innovation Technologies Europe s.r.o.
Anne-Catherine Probst - University of Applied Sciences Aschaffenburg
Istvan Racz - MTA CSFK Konkoly Observatory
Jonas Ringholz - Universität Würzburg

Diego Saikin - Czech Technical University in Prague
Michael Seeg - University Wuerzburg
Vojtech Simon - AI CAS & FEL CVUT
Petr Skala - Czech Technical University
Veronika Stehlikova - CVUT FEL
Jan Strobl - ASU AV CR
Dorottya Szécsi - ASU CAS CZ
Vladimír Tichý - University of Leicester
Ivo Vertat - University of West Bohemia in Pilsen
Martin Urban - Czech Technical University in Prague
Joern Wilms - ECAP
Andrzej Zdziarski - N. Copernicus Astronomical Center
Elzbieta Zoclonska - Nicolaus Copernicus Astronomical Center Polish Academy of Sciences

IBWS 2017 http://ibws.cz

14th INTEGRAL/BART Workshop

3rd – 7th April 2017 Karlovy Vary, Czech Republic

Organizers :

Astronomical Institute of the Academy of Sciences
Czech Technical University in Prague
Karlovy Vary observatory
Dr. Remeis observatory Bamberg
University Wuerzburg

Local Organising Committee:

Veronika Marsikova (chair), [v.semencova@gmail.com]
Rene Hudec, ASU AV & CTU Prague
Jana Polednikova, IAC & ULL La Laguna
Miroslav Spurny, Karlovy Vary Observatory
Martin Urban, CTU Prague
Ondrej Nentvich, CTU Prague
Stanislav Vítek, CTU Prague
Martin Blažek, CTU Prague

Program Committee:

Rene Hudec (chair) [rene.hudec@gmail.com]
Attila Meszaros, Charles University Prague, Czech Republic
Petr Pata, Czech Technical University in Prague, Czech Republic
Karl Mannheim, Wurzburg University, Germany
Martin Jelínek, Czech Academy of Sciences, Czech Republic
Joern Wilms, Bamberg, Germany
Alberto Castro-Tirado, IAA Granada, Spain
Franco Giovannelli, INAF-IAPS, Roma, Italy
Roberto Nesci, University Roma, Italy
Klaus Schilling, Wurzburg University, Germany

This event was sponsored by JEUMICO and Czech Academy of Sciences. Abstract booklet made by Martin Blazek.