Applications for APC association

NAME	GROUPE	Documents
RODRIGUEZ Jérôme	HIGH ENERGY	CV 1 page + motivation
FALANGA Maurizio	HIGH ENERGY	missing
GOTZ Diego	HIGH ENERGY	CV 2 pages + motivat
REVENU Benoit	HIGH ENERGY	CV + motivation
ROYER Frédéric	HIGH ENERGY	CV 1 page + motiv
HAIGRON Régis	HIGH ENERGY	CV 1 page + motiv
KHELIFI Bruno	HIGH ENERGY	CV 1 page + motivation
KERKYACHARIAN	ADAMIS	CV + motivation
STARCK Jean-Luc	ADAMIS	CV + motivation
CREZE Michel	COSMO LOGY	CV 1 page + motivation
CHARMOUSIS Christos	THEORY	CV 2 pages
VOLPE Cristina	THEORY	CV 4 pages +motivation

Jérôme Rodriguez

Permanent astrophysicist
Born 25 October 1974
Commissariat à l'Energie Atomique (CEA)
DSM/DAPNIA/SAp
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Tel : +33 1 69 08 98 08

Education & Experience

-Since late 2005: French Co-I of the INTEGRAL Science Data Centre consortium
-Since 2004: Permanent researcher funded by CEA/Saclay, on long term mission at the INTEGRAL
Science Data Centre, Geneva Switzerland until Sept. 2005
-2002-2004 : Post doc position funded by the French Space Agency, at the ISDC
-PhD in astrophysics, Universite Paris 6 (2002), « Spectro-temporal studies of microquasars in the Xrays
: Quasi Periodic Oscillations and Accretion Ejection coupling »

Main Research Projects

1. Microquasars : observations using INTEGRAL and RXTE. Leading since 3 years a monitoring
campaign on GRS 1915+105 with those 2 satellites, in coordination with ground based instruments. Reconducted for INTEGRAL AO 5. Scientific studies of feasabilities of studies of microquasars with SIMBOL-X
2. Timing analysis : Studies of Quasi Periodic Oscillations so far only using RXTE. Characterisation
of the behaviour of QPOs, spectral properties, etc.
3. (Obscured) X-ray binaries : obervations using several X/Gamma-ray satellites, INTEGRAL, RXTE,
Swift, XMM-Newton, Chandra.
4. New sources : Leading a campaign with RXTE and Swift to search for X-ray pulsations, and study
the X-ray spectrum in new objects found by INTEGRAL
5. Future missions : Involved in studies of feasibility of scienctific aspect with SIMBOL-X and SVOM/Eclair. Participation in both cases to the scientific data centre

Recent Publications

« Two Years of INTEGRAL monitoring of GRS 1915+105. Part 1: multiwavelength coverage with INTEGRAL, RXTE, and the Ryle radio Telescope », J. Rodriguez et al. 2007, submitted to
ApJ
« Two Years of INTEGRAL monitoring of GRS 1915+105. Part 2: X-Ray Spectro-Temporal Analysis », J. Rodriguez et al. 2007, submitted to ApJ
« The discovery outburst of the X-ray transient IGR J17497-2821 observed with RXTE and ATCA », J. Rodriguez, et al. 2007, ApJL, 655, L97
« A SIMBOL-X View of Microquasars », J. Rodriguez, Proceedings of « SIMBOL-X: the hard X-ray Universe in focus » workshop, 2007

-Co-organiser of the 2007 Les Houches School: "The violent Universe", Les Houches, France
March 2007.
-Principal organiser of the 2006 spring school Observing the X- and Gamma-ray sky held in

Cargese (Corsica, France) April 3-14 2006

Motivation

I have been working since the INTEGRAL launch within the IBIS/ISGRI instrument team in CEA-Saclay (SAp). All the permanent scientists of this team (PI: F. Lebrun, Co-Is: A. Goldwurm, P. Laurent, P. Goldoni), but me, have now moved to APC. On the other hand, most of the postdocs and the engineers are still in CEA-Saclay. None of the groups at SAp and APC could be self sufficient. The interaction between the team members in these two laboratories is therefore essential for the continuous improvement of the calibration, the data processing software and the scientific analysis. It has always been the intention to remain a single team split in two sites. Obviously this requires close coordination; i.e. weekly meetings and collaborative work in Saclay or at APC.
Moreover, I am involved in the preparation of the SIMBOL-X mission (PI: P. Ferrando, APC), more precisely in the scientific data center that is under the hands of A. Goldwurm (APC) and in the establishment of the scientific requirements (accreting compact objects and fast variability). This implies monthly meetings and more frequent shorter interactions.

Diego Gotz

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Email : diego.gotz@cea.fr
Position : Post-Doc
Date de naissance: 31/05/1975
Lieu de naissance: Sorengo (Suisse) Nationalité: Suisse

Diplômes

2001/11-2005/01: Doctorat en Astrophysique et Astronomie (soutenue le 14/01/2005, Mention: très honorable) à l'Università degli Studi di MilanoBicocca. Sujet de thèse: *A study of GammaRay Bursts and Soft Gamma Repeaters Detected with the INTEGRAL Burst Alert System*

2001/03 : Laurea (Maîtrise) en physique à l'Università degli St udi di Milano (Note finale 104/110). Déc 1999-Mar 2001 : Stage à l'Institut de Physique Cosmique de Milan (IFC/CNR). Titre du mémoire de fin d'études : *Studio delle prestazioni spettroscopiche del telescopio per astronomia gamma IBIS* (Une étude des prestations spectrales du télescope pour astronomie gamma IBIS).

Expériences professionnelles

2005/10-présent: Post-Doc au Service d'Astrophysique – CEA, Saclay (France), au sein de l'équipe INTEGRAL/IBIS, avec tâches de service concernantes la calibration du télescope IBIS, et activité scientifique reliée a l'étude des objets compacts (étoiles à neutrons isolées, et GRBs, survey).

2004/11-2005/09: Post-Doc à l'IASF/Milan, dans le groupe INTEGRAL, avec la responsabilité pour la détection rapide et l'étude des GRBs.

2001/06-2004/10 : Bourse de recherche à l'Istituto di Fisica Cosmica e Astrofisica Spaziale (Institut de Physique Cosmique et Astrophysique Spatiale, IASF) CNR à Milan, pendant laquelle j'ai développé le logiciel INTEGRAL Burst Alert System (IBAS), pour la détection en temps réel et la localisation des sursauts gamma cosmiques (GammaRay Bursts, GRBs) dans le champ de vue du télescope IBIS à bord du satellite INTEGRAL.

Publications

Auteur de 30 publications dans journaux avec comité de lecture (dont 7 en premier auteur), 22 papiers de conférence, une centaine de GRB Network Circulars et de 14 Astronomer's Telegrams.
Publications récentes :

– L. Sidoli, P. Romano, S. Mereghetti, A. Paizis, S. Vercellone, V. Mangano, **D. Götz**, *An alternative hypothesis for the outburst mechanism in Supergiant Fast X-ray Transients: the case of IGR J11215-5952*, 2007, **A&A**, in press
– **D. Götz**, N. Rea, G.L. Israel, S. Zane, P. Esposito, E.V. Gotthelf, S. Mereghetti, A. Tiengo, R. Turolla, *Long term hard X-ray variability of the anomalous X-ray pulsar 1RXS J170849.0-400910 discovered with INTEGRAL*, 2007, **A&A**, in press
– G.L. Israel, **D. Götz**, S. Dall'Osso, N. Rea, L.Stella, *Linking the X-ray timing and spectral properties of the glitching AXP 1RXS J170849-400910*, 2007, **A&A**, submitted
– **D. Götz**, M. Falanga, F. Senziani, A. De Luca, S. Schanne, A. von Kienlin, *IGR J08408-4503: A New Recurrent Supergiant Fast X-Ray Transient*, 2007, **ApJ**, 655, L101
– P. Kaaret, Z. Prieskorn, J.J.M. in't Zand, S. Brandt, N. Lund, S. Mereghetti, **D. Götz**, E. Kuulkers, J.A. Tomsick, *Discovery of 1122 Hz X-Ray Burst Oscillations from the Neutron-Star X-Ray Transient XTE J1739-285*, 2007, **ApJ**, 657, L97
– A. J. Bird, A. Malizia, A. Bazzano, E. J. Barlow, L. Bassani, A. B. Hill, G. Belanger, F. Capitanio, D. J. Clark, A. J. Dean, M. Fiocchi, **D. Götz**, F. Lebrun, M. Molina, N. Produit, M. Renaud, V. Sguera, J. B. Stephen, R. Terrier, P. Ubertini, R. Walter, C. Winkler, J. Zurita, *The 3rd IBIS/ISGRI soft gamma-ray survey catalog*, 2007, **ApJ** Suppl., 170, 175

Motivation

I am a postdoc at the Service d'Astrophysique (SAp) and my collaboration with APC is within the INTEGRAL team. INTEGRAL is an ESA satellite launched in 2002 and should be operated at least till 2010.
I am the scientist in charge of the coordination of the IBIS software development and should then be in close contact with the engineers and the scientists of the INTEGRAL team either in SAp (A. Gros, A. Sauvageon, J. Rodriguez, M. Falanga) or in APC (F. Lebrun, IBIS Co-PI; A. Goldwurm, R. Terrier, P. Laurent). With F. Lebrun

and R. Terrier, I am part of the IBIS/ISGRI survey workgroup. The aim of this group is the complete analysis of all the ISGRI (IBIS low energy detector) data aiming at producing a full sky map from which a source catalog is produced. This project is on going (the 3rd catalog has been published at the beginning of 2007). This work will continue beyond the end of the mission.

Benoît Revenu

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BP 20722
44307 NANTES CEDEX 03

Curriculum vitæ

• From January 2006 : SUBATECH Nantes

• Oct. 2002 – End 2005 : "Chargé de recherche (CR2)" au CNRS, on Auger experiment at IAP (Paris) and APC (from Jan. 2005)

• 2000-2002 : "Attaché Temporaire d'Enseignement et de Recherche", on Auger experiment, Collège de France (Paris)

• 1997-2000 : PhD Thesis, Paris VII University "Anisotropy and polarization of the CMB ; detection methods and data analysis" – PCC Collège de France (Paris) – with jury felicitations

• 1995-1996 : D.E.A. "Champs, Particules, Matières", Orsay University

• 1994-1995 : "Maîtrise de physique fondamentale", Paris VII University

• 1993-1994 : "Licence de physique fondamentale", Paris VII University

Motivation

I am working on the Auger experiment, particularly on the monitoring of the raw data. The goal of this work is to collect the different data fluxes (trigger rates, meteorological parametres, detector housekeeping (slow control), etc…), to format them in a common language (XML), and to transmit them to the computer hosting the data base. These are then used in a second step for the scientific data analysis, in particular the evaluation of the experiment acceptance.

I am working regularly at APC for discussion and implementation of changes in the data processing, decided in the Auger Monitoring group.

Frédéric Royer and Régis Haigron

Motivation

Our collaboration with APC is on the X–Shooter project. X–shooter is a spectrograph which will be installed at the VLT (ESO) in 2009. It is the first second generation instrument at the VLT.

X–shooter is developed by an international collaboration : ESO, Denmark, Netherlands, Italy and France. A large part of the hardware as well as of the observation software are under the responsibility of the first four partners. The GEPI (Paris Observatory) and the APC are forming the French consortium and are responsible for realizing the Integral Field Units (GEPI) and the conception and development of the X–shooter data reduction software (APC and GEPI).

The team working on the data software development is under the responsibility of Paolo Goldoni and is made of the following persons :

Paolo Goldoni – APC / CEA
Laurent Guglielmi – APC
Guillaume Blanc – APC
Frédéric Royer – GEPI
Régis Haigron – GEPI
Patrick François – GEPI
Matthew Horrobin – Amsterdam University

The collaborative work between GEPI and APC has started as soon as 2004 on the definition of the software requirements, and on the elaboration of the software design. The implementation phase has started mid–2006. The software developers (Laurent Guglielmi and **Régis Haigron**) are working closely together for programming the different reduction packages while the scientists (Paolo Goldoni and **Frédéric Royer**) are supervising the implementation and are making regular tests to ensure the robustness and the accuracy of the algorithms.

This collaboration requires a real team work, as well as numerous meetings to use at best the available manpower. **Régis Haigron** and **Frédéric Royer** are coming regularly to APC (one to two days per week) in the framework of this collaboration.


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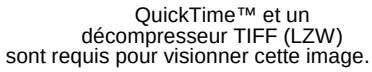
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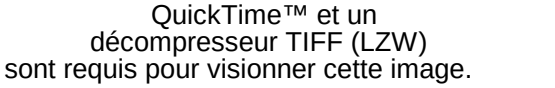
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Motivation

The very high energy gamma ray team at APC request to add Dr. Bruno Khelifi as an associated person to the team,

Dr. Khelifi carried out his thesis work at the forerunner of the APC, the PCC lab in College de France, working on the CAT gamma-ray telescope in the French Pyrenees, on the subject of the search for AGN and galactic sources with CAT.

Subsequently, passed two years on a postdoc position at the Max Planck Institute, Heidelberg, on the HESS experiment, with continuing links with our team. He passed the competition to enter the CNRS as a permanant reseacher in 2005, and has since been working at the LLR lab (Ecole Polytechnique) on HESS and the start of CTA.

His links with our lab remain very close, and he already in fact spends approximately one day per week at the APC working with us, and remains in contact by e-mail and telephone on a quasi-permanant level. This collaboration with our team is centred on the following subjects:

- HESS, development of analysis software, working with Santiago Pita and Arache Djannati. The APC, LLR, and Max Planck are putting together a turn-key analysis package for HESS, named HAP (HESS Analysis Package), which is flexible enough to run in the various labs, the calculation centre in Lyon (CC-IN2P3), and in MPIK-Heidelberg, and which can use a choice of calibration methods, background estimation techniques, reconstruction methods, energy and direction estimations, and spectral fitting techniques. The APC and LLR are leaders in this effort, necessitating intense collaborative work.

- HESS, analysis of PWN (Pulsar Wind Nebulae), working with Arache Djannati and Emma de Ona Wilhelmi. Part of Bruno's thesis work concerned the modelling and analysis of plerions, and his continued physics interest is based around this source class. This is one of the two main physics themes of the APC team, so leading to collaboration on the physics (analysis and interpretation) of these sources.

- HESS-II, development of Winston Cones, working with Pierre Espigat and Michael Punch. For HESS-II, a similar Winston cone design for the optical elements in front of the photomultipliers in the camera has been chosen. Due to increased cost estimates, however, a broad search for industrial partners who can produce these robustly at a competitive price is underway, on which Bruno, Pascal Manigot (Mechanical Engineer at LLR) and Pierre Espigat are collaborating.

- CTA, installation of the collaboration and work on the Quality and

Simulation work package, with Michael Punch and Santiago Pita. Both the APC and LLR have the intention to continue work in the very high energy gamma-ray domain with the natural successor to the current generation of experiments; CTA (Cherenkov Telescope Array). The quality engineers in both APC and LLR laboratories will form a team as the basis of the Quality workpackage overall for the project, together with Bruno and Michael Punch. On the simulation side, both teams intend to pursue together the simulations of the project in order to guide the technical choices (especially as regards the array layout and central trigger operation), with Bruno working with Santiago Pita and Michael Punch on these questions.

Gérard KERKYACHARIAN

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Cosmological research program
Since 2004, a collaboration was established, through an ACI program between statisticians (D. Picard and myself) and Astrophysicists of the APC group (J.Delabrouille, J-F Cardoso, F.Guilloux, G.Faye ...) around the statistical investigations on the CMB. The discussion were about the introduction of a new tool for analysing the CMB signal : the Needlets, which share the property of classical Wavelets : to be highly cconcentrated on the Sphere. These collaboration was fruitful (papers by F.Guilloux, G. Fay, J-F Cardoso) and it gives rise to a collaboration with statisticians and astrophysicists in Roma (cf the joint bibliography) Several discussions with the Adamis group at APC (in particular J. Grain and R. Stompor) have permitted to outline a work plan for polarised needlets, with interesting work to be done very quickly. This is one of several topics of interest to the ADAMIS team at APC calling for interesting and challenging developments in the field of mathematical statistics, which is the motivation for this collaborative work.

Jean-Luc STARCK

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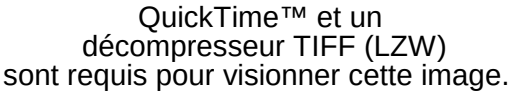
Motivation

The Planck space mission, to be launched in 2008 by ESA, aims at mapping the anisotropies of the cosmic background (temperature and polarisation), in particular for the purpose of characterizing the statistical properties of the anisotropies. These measurements will permit to constrain cosmological models, and in particular to test the standard hot big band model and to measure with unprecedented accuracy the cosmological parameters which describe our Universe as a whole. The Planck mision is one of the key experiments for this purpose.
The scientific exploitation of Planck requires cutting-edge data processing and a sophisticated data pipeline. For the past 2 years, Jean-Luc Starck has collaborated with the ADAMIS team for the development of multiscale analysis tools on the sphere, for component separation in the observation, and for various detection problems. This collaboration has resulted in the development of a large software package publicly available, developed in the context of the Astro-MAP project coordinated by Jacques Delabrouille.

In the future, we plan to extend these tools to the analysis of CMB polarisation, of the utmost importance for undestanding better the very early Universe, and in particular the models of inflation.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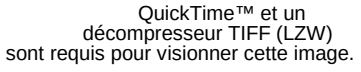
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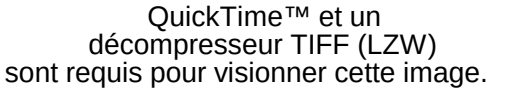
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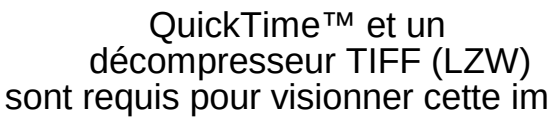
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