



ESTEC, 16+17 June 2011

Minutes from 02 August 2011

Attendants

Søren Brandt	DTU Space	SB
Roland Diehl	MPE Garching	RD
Maurizio Falanga	ISSI Bern	MF
Carlo Ferrigno	ISDC	CF
Sergei Grebenev	IKI Moscow	SG
Wim Hermsen	SRON	WH
Margarita Hernanz	IEEC-CSIC, Barcelona	MH
Peter Kretschmar	ESA, ESAC	PK
Roman Krivonos	IKI Moscow	RK
François Lebrun	CEA Saclay	FL
Miguel Mas Hesse	INTA Madrid	MM
Mark McConnell	Univ. New Hampshire	MMC
Giorgo Palumbo	Univ. Bologna	GP
Konstantin Postnov	Moscow State University	KP
Jean-Pierre Roques	CESR Toulouse	JPR
Norbert Schartel	ESA, ESAC	NS
Pietro Ubertini	INAF Roma	PU
Ed van den Heuvel	Univ. Amsterdam	EvdH
Jörn Wilms	Univ. of Erlangen-Nuremberg	JW
Christoph Winkler	ESA, ESTEC	CW

1 Welcome, Agenda, Actions

The agenda was accepted; the minutes of the last meeting were approved, without changes.

The new IUG chair, Angela Bazzano was unfortunately not able to attend.

2 Statistics on Archive Usage

PK reported on archive usage data collected by M. Cadolle-Bel (ISOC). There are many caveats regarding the completeness and the definition of reported numbers (see [viewgraphs](#)). Globally, ~ 4 Tb/month are downloaded from ISDC and ~ 0.5 Tb/month from the RSDC in Russia. Recent download rates from ESAC and HEASARC are very small.

An extended discussion ensued about which numbers should be provided. It was decided to exclude the number of accesses.

RK proposed to collect information about how many complete copies of the archive exist.

3 Mission Status

PK continued with news from the INTEGRAL mission (see [viewgraphs](#)).

Recently, a slight increase in fuel consumption has been noted for which the reasons are not fully clear, but with a consumption of ~ 1 kg/month and ~ 120 kg fuel left this is not worrisome.

The 17th SPI annealing went well. The SPI cooling plate is now also kept in the shade from Earth during perigee passages.

With increasing solar activity the background in the INTEGRAL instruments is decreasing, but a solar flare and CME on 7 June led to a switch-off of all instruments, except SPI.

The perigee altitude is still decreasing up fall 2011. This currently leads to high proton exposure affecting the performance of the solar arrays. The normalized current now has decayed from just below 58 A to ~55 A, but is still far above the allowed margin.

4 Project Scientist Status

CW presented the status (see [viewgraphs](#)), including an overview of AO-8 scheduled observations and details on AO-8 TOO observations.

An overview of the properties of AO-9 observing proposals and the TAC recommended programme was given. This is the first time the new scheme of just three proposals was used, which worked well.

KP raised the question if a proposal could be submitted to multiple panels at once, if it covers multiple areas. This could have an influence on the distribution of time in the panels. During the subsequent discussion it was pointed out that proposals covering multiple areas/categories always get evaluated by all relevant panels.

Jacques Paul has retired at end of year, no new Mission Scientist has been appointed to replace him. D/SRE has appointed Angela Bazzano as new IUG chair for a period of two years, starting 01 July 2011. Mikhail Revnivtsev and Jacco Vink have been appointed as new members for a period of four years, starting 01 July 2011. The current two-year term will end in July 2011 for Angela Bazzano, Konstantin Postnov and Jörn Wilms. Propositions for candidates for the next rotation are welcome.

For the 10th year of INTEGRAL operations, CW has triggered a variety of initiatives to promote the mission, including a set of student projects. Support from IUG members, e.g., to assess projects is very welcome. Several members indicated their readiness to contribute. SB proposes C.A. Oxborrow from DTU-Space as juror on the “build your own Integral” project.

5 AO-9 and Long-Term Legacy

The aspect of the INTEGRAL legacy has been explicitly pointed out to proposers in AO-9 and the mission extension science case has been included in the documentation for proposers. These aspects also were emphasized in the instructions to TAC members, although there was some discussion on how much this played a role in the panel discussions.

Since the recommended AO-9 observing programme was not yet approved by D/SRE at the time of the meeting, CW presented summarized information on the recommendation without details for discussion (see [viewgraphs](#)). The scheme of multiyear proposals and confirmation has worked well.

A discussion ensued around the distribution of dither patterns and types of proposals. PU noted the importance of reaching a deep enough exposure to determine the high-energy cut-off in AGN. RD emphasized that for nucleosynthesis studies, coverage of intermediate latitudes would be important, which is not necessarily covered by typical observing proposals.

The question was raised if approved observations could be slightly modified to fill in underexposed regions. NS commented that pure legacy programmes should not be tried to be obtained from a normal AO call.

CW proposed that IUG looks at programme details. RD, PU and WH volunteered to assess the programme once available. PU proposed a Legacy session at the 2012 INTEGRAL Workshop, maybe also a discussion at Chia Laguna.

Action 11–1 on ISOC	Due: end Jul 2011
<i>Create exposure maps for up-to-end of AO-8, delta map for AO-9 as accepted and total.</i>	

Action 11–2 on ISOC	Due: end Jul 2011
<i>Provide IUG with target coordinates and basic observing strategy for accepted non-TOO proposals.</i>	

The results of these two actions will be provided to the IUG and especially to RD, PU and WH for a report at the next IUG meeting.

6 Payload, Calibration, Science Ground Segment

6.1 IBIS calibration

FL presented the progress on mask calibration (see [viewgraphs](#)). There has been only limited progress.

Discussed strategy of exclusion masks to avoid mask defects. Implemented in OSA9, strong improvement, but still residuals remain. Improvement may need a 3D model of the mask, instead of current 2D. Limited available time leads to slow progress on model. Still, the sensitivity for faint sources in crowded regions has gained ~ 1 order of magnitude from OSA8 to OSA9.

An improved coverage of the mask corners has been achieved, despite the fact that one AO-8 observation finally could not be adapted, due to a veto from the PI. But there are still ~ 700 ks of exposure missing.

A discussion ensued on how and when to best achieve this goal. The conclusion was that one should try to complete the mask calibration programme by 2012, which would require ~ 3.5 revolutions of dedicated Crab calibrations.

Recommendation 34: Mask calibration
<i>IUG recommends up to two INTEGRAL orbits for the purposes of the IBIS mask calibration in 2011 and one in 2012.</i>

Action 11–3 on FL & ISOC	Due: end Aug 2011
<i>Study current and next observing programme to identify observations also potentially useful for mask calibration.</i>	

Statement by J. Wilms (PI of Cyg X-1/1915 program): *If 1–2 observations of Cyg X-1 can be done with off-axis pointings while RXTE is still alive, this can be done without significantly affecting the approved INTEGRAL program and these observations could be modified and included in the above two INTEGRAL observations.*

FL continued with news on the ISGRI energy calibration (see [viewgraphs](#)). Team is changing to use a linear model for rise-time correction and better temperature correction. The code has been developed and validated. Another issue found since the last report is a bug in the low-threshold function. The threshold has moved significantly with time since launch.

CF noted that the NOMEX correction, which is also applied, had been fine-tuned in conjunction with the previous “ghost buster” tool and would probably need to be re-tuned. He proposed a collaboration between Saclay and ISDC to address this. One issue is that the previous NOMEX correction was determined by P. Lubinski, who no longer works at ISDC.

PU summarized the calibration efforts at Roma (see [viewgraphs](#)). A new ARF based on the Crab observations of revolution 967 is in testing, with no firm release date known. Matrices will probably have to be redone once the new energy correction presented by F. Lebrun is in place (OSA 10).

6.2 IBIS

PU described the status of IBIS operations and support from Italy (see [viewgraphs](#)). Thanks to new ASI contract the team is well set up until mid 2013.

6.3 SPI

The update on the SPI status (see [viewgraphs](#)) was presented by JPR. Annealings 16 and 17 went well. There is evidence for pollution on one detector, therefore the next annealing should be done including cold box outgassing.

New matrices based on last Crab observations have been provided to ISDC and validated. Crab spectra are quite stable, the normalization is now slightly lower than in the past. If this is due to the published Crab flux variations, then the SPI properties are stable at the 1% level.

SPI team is addressing the use of multiple events now, which should improve high energy results. The SPI team would need longer integration times on the Crab to calibrate the high energy response well.

A new SPI web site is being set up at CERN. It includes flat-field data for use with SPIROS and a web front-end data analysis tool. Users will need to create an account at CERN.

6.4 JEM-X

SB described the JEM-X status (see [viewgraphs](#)). Both units are now in regular use. Anode losses remain at ~1% per year.

The gain increase continues as expected and is controlled by regular HV changes. But as a side effect, the gain is now more sensitive to temperature variations — from ~1%/deg to > 4%/deg, which can mean up to ~20% variations within an orbit. PU inquired if the temperature readings could be used to correct the gain. SB stated that this was foreseen in the long term.

Cd sources are now down by a factor of 90% since launch, making the calibration increasingly dependent on the 29.6 keV Xe fluorescent line.

For NRT data, automatic gain correction can be thrown off by the various issues. This is corrected in off-line analysis with a short delay.

A drift voltage test showed a reduction in the double trigger rate when increasing the drift voltage. The drift voltage has been lowered by lowering the anode voltage. It is now being studied if this voltage should be decreased, as the detector was designed for a fixed ratio between these voltages.

N.J. Westergaard and N. Lund are re-analyzing all JEM-X Crab data, the results will be presented in a Technical Note. N.J. Westergaard is working with specialists from other teams on the cross-calibration. An update of IC files to ISDC is expected over summer.

Finally, SB presented news on the first superburst observed by INTEGRAL (from SAX J1747.0-2853) which led to some discussion on these results and follow-up work.

6.5 OMC

The OMC status was presented by MM (see [viewgraphs](#)). Overall, the instrument is holding up very well with slow increases in dark current and hot pixels, but still at a every low level. The photometric calibration is very stable.

A first release of the OMC Output Catalogue is to be presented in summer. Download statistics from the OMC Database are roughly stable. In the last 12 months there were 4664 accesses from 310 hosts, leading to 3273 downloaded light curves, 1100 of these as VOTable.

The OMC team is aware of 30 science papers in refereed journals using OMC data and 60 science contributions (proceedings, bulletins,...). The papers are mostly on binaries and AGN/blazars (see [list](#)).

6.6 ISDC

CF presented news from the ISDC (see [viewgraphs](#)), including operational and data distribution statistics. There has been some reorganization at ISDC, but the level of support for INTEGRAL has not changed. OSA9 has been downloaded from 65 sites.

The source-oriented [HEAVENS](#) interface is being extended. There is significant use also from private ADSL addresses, not only Swiss ones.

The subject of NOMEX correction was brought up again with some discussion on the details between CF and PU.

Action 11-4 on CF	Due: end July
<i>Contact L. Natalucci to verify NOMEX correction</i>	

CF will also contact P. Lubinski about collaborating on the update of the NOMEX calibration.

ISDC did its own analysis of (Crab) data in order to validate, e.g., time correlation, responses etc.

A rounding bug in DAL for SPI/ACS off-line GRB triggers was found and corrected. On-line triggers are limited by not accounting for the reception station, leading to a spread of 20 ms (~size of Earth).

6.7 ISOC

PK gave a brief overview of the ISOC status (see [viewgraphs](#)). There has been a lot of work related to the changes in the AO scheme and on planning issues caused by the orbital evolution.

The call for data right proposals will go out on 5 September 2011 with a submission deadline on 14 October 2011 (one week after XMM AO-11).

7 Earth/CXB Observations

CF presented a brief summary of the plans so far (see [viewgraphs](#)). A more detailed planning requires a Long-Term Plan for 2012 to be set up, which is pending on the approval of the AO-9 observing programme.

MM noted that OMC would like to use these observations for straylight calibration, which needs to be taken into account when the observations are set up.

8 Conferences

8.1 Chia Laguna 2011

PU presented the preparations for the Chia Laguna 2011 event (see [viewgraphs](#)). Support has been obtained from INAF and ASI, the organizers hope for support from ESA and other agencies. PK will look into ESA support, but requires a formal request.

A list of invited speakers was presented, some ideas are to be developed further.

8.2 INTEGRAL Workshop 2012

The current plans for the 2012 INTEGRAL Workshop were presented by FL (see [viewgraphs](#)). It is foreseen to have the conference for the full week of 15-19 October 2012; about 300 participants are expected. An outreach event in French will probably be scheduled for Tuesday.

Currently 9 invited talks are foreseen with a duration of 30 minutes. Contributed talks would be for 20 minutes each.

The currently available poster area can only hold ~50 posters, which would require at least a split during the week. Posters might be also in a smaller format (e.g., A2) than usual and be available online.

After some discussion on the need for parallel sessions, it was decided to have a second room on two days, as a compromise between flexibility and cost impact. There was general agreement to allow for Wifi access in the conference rooms.

Following an ad-hoc discussion on the conference title, the preferred version was: “An INTEGRAL view of the high-energy sky (the first ten years)”.

The format of the proceedings was also discussed. A majority of IUG voted for continuing with electronic publishing on PoS. It could be envisaged to create a limited number of books via a print-on-demand service.

9 Next Meeting

The next meeting should focus on the preparation of the upcoming mission extension. The probable time range is February 2011.