Integral User Group Meeting 10

ESTEC, 16+17 December 2010 **Minutes from 21 January 2011**

Attendants

Angela Bazzano	INAF Roma	AB
Søren Brandt	DTU Space	SB
Roland Diehl	MPE Garching	RD
Maurizio Falanga	ISSI Bern	MF
Neil Gehrels	GSFC	NG
Sergei Grebenev	IKI Moscow	SG
Wim Hermsen	SRON	WH
Margarita Hernanz	IEEC-CSIC, Barcelona	MH
Peter Kretschmar	ESA, ESAC	PK
Roman Krivonos		RK
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
Richard Southworth	ESA, ESOC	RS
Pietro Ubertini	INAF Roma	PU
Ed van den Heuvel	Univ. Amsterdam	EvdH
Roland Walter	ISDC	RW
Jörn Wilms	Univ. of Erlangen-Nuremberg	JW
Christoph Winkler	ESA, ESTEC	CW

1 Welcome, Agenda, Actions

The agenda was accepted, with the addition of a presentation on the future and MAXI by PU.

The minutes of the last meeting were approved.

IUG action 09–2 on archive usage: There is no consistent reporting among different archives on the statistics of access and downloads, due to a lack of requirements and definitions. After a short discussion, IUG recommended a common set of statistics:

Recommendation 30: Archive Usage Data
All INTEGRAL archives shall provide the following data on archive usage:

- *downloaded volume (external),*
- *number of download requests,*
- *number of unique accesses (IP adresses), leading to data download.*

PK stated that based on an IUG recommendation, a change request would be raised on the ESAC archive software. RW and SG state that they can provide these data; NG will get together with Steve Sturner for GSFC.

Action 10–1 on RW, PK, NG, SG **Due: next IUG meeting**
Provide archive usage statistics in line with IUG recommendation.

RW pointed out that high-level data (e.g., HEAVENS) has relatively little volume but high value for the user, which is not reflected in such statistics.

IUG actions 09–1, 09–3, 09–4 answered in the course of the meeting.

2 Mission Status

PK briefly presented the mission, MOC and ISOC status (see viewgraphs). The main changes are that the SPI cooling electronics configuration was changed to a safer status, the SPI HV was lowered and that since October both JEM-X units are used again.

Perigee altitude is still decreasing, INTEGRAL is now getting into the proton belts. One visible effect is increased degradation of the solar array current, this is being followed carefully.

At the time of the meeting the last regular Goldstone pass was taking place. A decision to not continue the use of Goldstone after the end of the previous agreement was taken at HQ level. INTEGRAL is now fully covered by Redu with the caveat that a small gap in coverage may appear in late 2014.

PU applauded the fast TOO reaction time which is important for the INTEGRAL science.

3 Project Scientist Status

CW presented the status (see viewgraphs). An overview of scheduled observations was presented. There is increased carry-over from AO-7 to AO-8 caused by ToOs late in the AO.

Given the low frequency of meeting, CW proposed to extend the current membership from two to four years. Same for the chair, but with an appointment shifted by two years from the other members. IUG unanimously approved this idea, applying for future members.

Recommendation 31: Terms of Reference
IUG recommends that future appointments into the IUG are for four year terms, with the term of the next chair being two years and four years afterwards.

Regarding the mission extension PK commented that in the future SPC might ask for input from national funding agencies on continued support instead of mission and PI teams as now.

CW summarized the new communications process at ESA. IUG should provide much more frequent input for the communications committee to have a much higher visibility for INTEGRAL! Also the visibility in more general science journals could be improved.

4 ATELS: ISDC and the scientific community

JW reported on different cases of ISDC staff being pushy with regards to ATels. After some exchanges, recent mails have been much more appropriate in tone. But still pre-

formulated ATels have been circulated. Analysis work on some occasions seems to have been done, before the NRT data distribution was available. The problem seems to be mainly for serendipitous sources in the FOV.

RW explained the process at ISDC (see viewgraphs). In the case of serendipitous sources ISDC has found that the only way to get a speedy reaction was to send a draft ATel around.

An extended discussion with widely varying opinions ensued. One of the main questions was the relative importance of speed versus keeping PIs safely informed. Different ideas were proposed. Finally, JW proposed a wording to be added to the NRT distribution mails which was generally approved.

Recommendation 32: Serendipitous sources
Whenever a serendipitous, unknown, source is discovered in the NRT data from an INTEGRAL observation, the discoverer is mandated to inform all other people with data rights in that observation with a suggestion on how to proceed and clear deadline for reactions. The Project Scientist should be kept in copy of these exchanges.

The following text should be added to the NRT data distribution mails:

In case a serendipitous source or event is discovered in the analysis of the NRT data from this observation and no specific data rights have been awarded on that source/event, the INTEGRAL User's group requests that you discuss quick publication of an ATEL with all people with data rights on this observation by doing a group reply to this email. These people are:
...
Please also include the INTEGRAL project scientist, Chris Winkler, in your communication.

5 Earth Observations

RW explained the science case (see viewgraphs). New observations for a total of ∼4 d instead of ∼1 d should improve statistics and gain on systematics, allow to resolve the differences with Swift/BAT and to profit from the better determination above 100 keV possible with INTEGRAL.

RS explained the observational and operational constraints (see viewgraphs) and gave several examples of possible observations. The reduced Flight Control Team strongly limits the flexibility for special operations, but the previous Earth Observations have led to a well-defined procedure that could be implemented. Due to current staffing problems (only 2 of 3 engineers available), no observations would be possible within the first 9 months of 2011.

A strategy of slewing across the Earth instead of letting the Earth move through the FOV was ruled out, since it would require a completely new way of moving the satellite.

The evolution of the INTEGRAL orbit means that up to 2014 the useable time of the revolution would have the Earth mainly in front of the Galactic Plane.

Possible observing strategies we discussed at length. The relative size of the Earth in the FOV limits the useful time per revolution to ∼30 ks, while startracker constraints lead to a minimal staring time of ∼60 ks. For safety reasons, observations should be at the start of a revolution.

A sequence of 16 consecutive observing runs as implied by the AO-8 proposal would be impossible to implement with the current manpower, but it was generally agreed that observations spread out in time with no strict requirements on their regularity would be sufficient.

The final proposal is to spread out the necessary observations over two years, starting in AO-9 (2012) following the same basic procedure for the individual observations as in the past. A more detailed strategy still needs to be settled. Some information must be available for the AO-9 documentation provided with the call in early March. The detailed description of the observations is required by end June.

Action 10–2 on RS, RK, RW, M. Tuerler	**Due: end Jan 2011**
Propose a clear strategy for Earth Observations.	

The Earth Observation data will be public.

6 Low Significance GRB Alerts

S. Mereghetti proposes to also distribute times and positions of GRBs of lower significance found with IBAS. A new trigger level would need to be defined for interested parties (e.g., small robotic telescopes) to subscribe to.

IUG agrees with this idea.

7 Payload and Calibration Status

7.1 IBIS

PU reported on the IBIS status, which is overall nominal, and on the tasks done by the IBIS team (see viewgraphs).

He continued with information on reports of variability of the Crab. Good agreement of several satellites on long-term variations on few percent. To be discussed at next IACHEC meeting. WH pointed out that the pulsed emission evolves in a stable manner and could be used as check.

FL reported on the efforts on Mask calibration (see viewgraphs). Using data from the Galactic Latitude scans (proposal 820029, PI Lutovinov) would add mask coverage and thus save ∼370 ks of dedicated calibration time. This idea is supported by the IUG.

He continued with ISGRI spectral calibration issues (see viewgraphs). Significant improvement is possible by a changed temperature dependence and by replacing the use of IREM counters (doubtful values) by a linear fit to the observed temporal evolution. This will probably be delivered by end of January to ISDC.

7.2 SPI

JPR presented the SPI status (see viewgraphs). Solar activity is increasing slowly. JP explained the logic behind reducing the HV for the active detectors and presented annealing results, changes to the cooler electronics configuration, and the recent issue with the Earth albedo. Some updates on science done with SPI were also given.

From the calibration effort done by the SPI team at Toulouse, no change in the Crab brightness is visible. Four revolutions of Crab calibrations per year are deemed sufficient and necessary for SPI calibration.

7.3 JEM-X

The JEM-X status was given by SB (see viewgraphs). Running both JEM-X units again since revolution 976, immediately useful on IGR J17480-2446 (Terzan 5 source) where burst oscillations have been observed.

Might want to set HV as function of target (solar aspect angle) since the gain is strongly temperature dependent by now ($\sim$4%/K for JEM-X 1, i.e., 20% gain variation over typical 5 C temperature fluctuations).

The particle rate observed by the Oulu neutron monitor decreased from its maximum but still is at a high value relative to the last 40 years.

New "first principle" analysis of Crab show overall decay trend – possibly unaccounted for deadtime. Correcting for this, one sees something similar for Crab as in other instruments.

7.4 ISDC

RW presented ISDC news (see viewgraphs).

The delay for distribution of consolidated data is mainly driven by the CD production at MOC. In last year this has rather been 4–6 w instead of 3–4 w with an improvement in last few months.

The HEAVENS access to scientific data products is used by $\sim$10 visitors/day. ISDC is working to include SPI and PICsIT data, trying to improve OSA accordingly. A catalogue of bright events (flares, GRBs, ...) exists and OSA products with higher time resolution are being produced.

There is a good correlation between ISGRI and SPI at low energies for Crab. Clear deviations at higher energies, caused by energy calibration issues of ISGRI?

There is disagreement between the Crab lightcurves produced by CESR and those produced by ISDC. The reasons are unclear and need further investigation.

PU proposes a special meeting on Crab calibration in the Ground Segment. FL notes that while the patch for energy calibration is planned for end January, a thorough effort will need about a year.

Action 10–3 on ISOC	**Due: end Feb**
Make sure calibration issues are clearly spelled out in AO documentation.	

8 AO-8: consequences for AO9 and later: policy changes?

CW summarized the statistics over the last AOs and explained various reasons for the apparent decrease in proposal numbers. The picture appears significantly different when counting data right requests instead of proposals, as now many different data right requests can be combined into a single proposal (see viewgraphs).

The Compact Object panel requested advice from the IUG on the distribution of time across panels, since they have the majority of the proposals but not of the time. The issue seems to be caused by proposals in "Others" which include some with large observing times.

CW presented several possible ideas to deal with the issue raised (see viewgraphs). After some discussion, it was agreed to change the number of proposals categories to three, based on the main scientific topic and to drop "Others".

Recommendation 33: Proposal Categories
IUG recommends that for AO-9 and beyond there will be three proposal categories, called:

1. *Galactic Astronomy*
2. *Extragalactic Astronomy (including CXB, GRB)*
3. *Nucleosynthesis and diffuse line/continuum emission*

Further discussion ensued about the INTEGRAL legacy and how to ensure that the scientific goals formulated in the mission extension case were reflected in the observing programme.

It was agreed that TAC and proposers will be provided with the science case for the mission extension and that the importance of legacy science is emphasized. At the next meeting IUG will review the match of the approved AO-9 programme with the long-term science goals. Depending on this match, further steps might be taken (e.g., future special legacy programmes) to make sure the long term goals will be secured.

9 Future Environment for INTEGRAL

PU summarized his view of the future environment for INTEGRAL to operate in (see viewgraphs) with an emphasis on MAXI results.

10 AOB

A conference with the working title "INTEGRAL Legacy II: The extreme, variable high energy sky" is proposed by the Italian colleagues to take place in Chia Laguna (Sardinia) for September 12–17 or 19–24 (see viewgraphs).

11 Next Meeting

The meeting should take place after the AO results are known. Tentatively, the date has been set to 23/24 June 2011.