Integral User Group Meeting 06

ESAC, 11+12 June 2008 **Minutes from 24 June 2008**

Attendants

Wim Hermsen	SRON	WH
Eugene Churazov	IKI Moscow	EC
Andrea Goldwurm	CEA Saclay	AG
Chryssa Kouveliotou	NASA, MFSC	CK
Jörn Wilms	Sternwarte Bamberg	JW
Ed van den Heuvel	Univ. Amsterdam	EvdH
Giorgo Palumbo	Univ. Bologna	GP
Jacques Paul	APC Paris	JP
Gerry Skinner[1]	NASA, GSFC	GS
Sergei Grebenev	IKI Moscow	SG
François Lebrun	CEA Saclay	FL
Roland Diehl	MPE Garching	RD
Søren Brandt	DTU Space	SB
Miguel Mas Hesse	INTA Madrid	MM
Roland Walter[2]	ISDC	RW
Rashid Sunyaev	IKI Moscow	RS
Christoph Winkler	ESA, ESTEC	CW
Arvind Parmar	ESA, ESTEC	AP
Peter Kretschmar	ESA, ESAC	PK

[1] For Neil Gehrels
[2] For Thierry Courvoisier

1 Welcome — WH

The agenda was changed to move the discussion about AO-6 results and the immplications for future AOs to Wednesday.

The previous minutes were accepted without changes.

Previous actions:
IUG 05-01: User-friendly access to test data – closed
IUG 05-02: Contact Valencia on IBIS mask – ongoing
IUG 05-03: Detailed plan for calibration observations – closed
IUG 05-04: Integral cross-calibration report – closed
IUG 05-05: Draft IUG Terms of Reference – closed
IUG-05-06: Observation schemes around (150,0) – closed
IUG-05-07: Handling extreme operational cases – ongoing
IUG-05-08: Define nearby SN – closed
IUG-05-09: Contact project on old documentation – closed

2 Mission Status — AP

AP presented changes at ESA. The Science Directorate will be merged with robotic exploration to be become the Directorate of Science & Robotic Exploration (SRE).

The mission status is fine. No major anomalies have happened, the fuel consumption remains low (140 kg left in April with $\sim$9 kg used per year). Since January MOC is working under the revised operations concept with only one team at ESOC operating XMM and Integral. Use of the Russian Bear Lake's station was explored but finally it was decided to remain with the current setup.

On agreement with the XMM-Newton PS, the Integral TAC for AO-6 was permitted to award up to 300 ks XMM-Newton time for short simultaneous or follow-up observations. In AO-6 this option was requested by only one submitted proposal.

The Integral Operations Coordination Group advising the Mission Manager was set up, with a first meeting on 24 April. Topics relevant to the IUG should be reported by PK as IOCG chair.

The average telemetry usage seems to have reached its peak. Three additional packets have been assigned to SPI to avoid saturation. *See below for further discussion on telemetry issues.*

The SPC approved an extension until end Dec 2012 with a single reporting line for Integral and XMM-Newton. In 2007 the SPRT recommended to consider mission extensions competitively. A proposal was prepared by the ESA executive and presented to the SPC in June 2008. The proposal is to create a consolidated operations plan covering all missions (accepted and planned). This is then reviewed via the SSAC to set priorities. In November 2008 HST, SOHO, Cassini/Huygens, Cluster & Double Star MEX and VEX will be discussed.

Integral and XMM-Newton would have been in that group as well, but because of the acceptance until 2012 will be discussed in November 2010. Given the current situation in the science programme, this is good news. The Integral science case will nevertheless have to be presented at the November SPC to allow 2011–2012 science operations. A supporting letter from the IUG by early September would be very useful.

Action 06–1 on WH	**Due: 29 Aug**
Draft supporting letter	

3 NASA funding situation – GS

GS explained the process and outcome of the NASA Senior Review. The items NASA currently is funding and their future situation are summarized in the table below.

US Guest Observer support	*continued at reduced level*
US PI teams	*going to zero as planned*
Goldstone	*OK at least through Sep 2010*
US GOF	*Reduce from 2 to 1 FTE (+0.2 to Sep 2009)*
US IUG	*continued*
ISDC personnel	*2 FTE already reduced to 1. Other ending 31 Jan 2009.*

RW commented that the remaining programmer at ISDC (B. O'Neel) will be kept, paid by Swiss funds.

While the US gamma-ray community is very well participating in Integral AOs, it is small compared to other missions, which weakened its stance in the Senior Review. Given the conditions, Integral obtained a result that can be lived with, the main problem being the reduced support to ISDC. CK will retire as chair of US IUG after four years of service, a new chair will have to be found.

4 Project Scientist Report — CW

CW summarized normal and TOO observations since the last IUG meeting. Five TOO requests were implemented, six more rejected for various reasons as explained in detail.

The projected carry-over from AO-5 to AO-6 is ∼1.8 Msec. Partially this is due to observations which are very restricted and partially to TOOs.

The statistics for received AO-6 proposals were presented in detail (see viewgraphs). The number of different people/groups applying seems to remain roughly stable.

CW went on to discuss 'success factors', like publication statistics, number of proposals, oversubscription, etc. CW went on to discuss the issue of TOO proposals. With the reduction in normal time (subtracting KPs), the requested time in normal proposals has been reduced, but the time requested in TOO proposals has remained roughly constant, which complicates the derivation of oversubscription factors.

The AO-6 TAC selected 45 out of 61 open time and 96 out of 118 KP associated proposals. The Russian return was only 2.4 Ms instead of the 6 Ms guaranteed and compensation is required. MM noted that the fraction of accepted proposals is relatively high, compared to the time based oversubscription factor. PK commented that frequently for TOOs the TAC accepts several proposals on a given source class but in the comments notes that in the end only one will be scheduled, depending on the triggers.

The TAC membership will be rotated for about half of the TAC and all three panel chairs. CK proposes to increase the fraction of US observers in the TAC, currently there is only one.

The publication rate seems to slow down somewhat. No positive effect of KP proposals has been noticed yet. The relative 'value' of proposals associated to Key Programmes was discussed.

5 AO-6 TAC deliberations — EvdH

Since the main results were reported by CW already, EvdH focused on the problems faced by the TAC in AO-6. While the TAC should concentrate on scientific value and feasibility, the Russian return has always been kept in the back of their minds and in the past they have mostly managed to find a solution, but not this time.

The effective open time (minus 2 Msec reserved for TOOs and 1.8 Ms of carry-over) was 6.2 Msec. After applying a factor of 1.5 for scheduling efficiency, 9.3 Msec could be distributed. Following the TAC Guidelines, the Compact Objects panel could distribute

1.5 Ms, the panel for Extragalactic Sources 4.8 Ms, and the third panel (Nucleosynthesis & Other) 3 Ms.

Only three Russian proposals were received, one for GRBs (no time), one for a compact object (400 ks) and a final huge proposal under "Others" for 6 Ms. While the TAC ranked this latter proposal highly scientifically, it was in conflict with the rules laid out in the AO documentation and would have largely interfered operationally and scientifically with an accepted Key Programme. Finally, the TAC accepted one part yielding 2 Ms out of the requested 6 Ms for the huge proposal and both others for a total of 2.4 Ms.

An extended discussion around the Russian share ensued. EC explained that in the letter to IUG Chair (May 9, 2007) it was explicitly requested to exempt proposals for Russian share of observing time from 1Ms limit. The IUG recommendation on the 1Ms limit was formulated as recommendation of the IUG chair instead of the full IUG as reaction to Russian request. WH pointed out that the D/Sc accepted the recommendations by the IUG and the IUG Chair, resulting in the AO-6 documentation including the 1 Ms limit applying to all proposals.

Furthermore, WH pointed out that if this proposal had been submitted as Key Programme proposal in the earlier call it would almost surely have been accepted. RS commented that such programmes could be considered internal Russian Key Programmes, but not shared internationally.

To clarify the situation CW presented the evolution of the different shares. For historical reasons, the Russian return is 24% on Core Programme and 27% on Open Time. As the Core Programme is reaching its end, the actual Russian share is currently slightly increasing. RS later in the meeting noted that the original intent was a share of 25% – which was achieved on average in the past – and this quota could be applied for the bookkeeping once the Core Programme was terminated. In addition to the time not attributed in AO-6 there is an accumulated under-return (AO-1 to AO-5) of $\sim$1.6 Ms for the Russian share, e.g., by non-triggered TOOs.

CW proposed the following options to resolve the issue of the required Russian compensation:

1. Compensate all missing time in AO-7, which would render a normal AO-7 impossible.
2. Distribute the return over the following three AOs ($\approx$ 1.7 Ms per AO).
3. Include the Russian share in Key Programmes.
4. Reduce Key Programme share in order to free up time.

WH emphasized that any Russian Key Programmes should also have associated proposals submitted in order to demonstrate the support of Integral by the community. EC doubted that a significant number could be obtained, as Russian observers might find it easier to deal directly with the PI. Other IUG members supported WH's point of view as necessary to show the success of the mission.

The Russian IUG members insisted that Russian Key Programmes (if introduced) and all "associated proposals" are for exclusive use by scientists affiliated with Russian institutes and universities for the 1-year proprietary period.

EC requested clarification of the current status for AO-6. The programme for AO-6 has been accepted by the Director of Science and is no longer open to discussion.

An extended discussion ensued. To focus the arguments the chair asked for the contributions with respect to science topics. It was generally commented that it would be easier to argue with a detailed AO-6 programme published, but ISOC is still working on the database updates.

6 Review of AO-6 w.r.t. Integral science goals

6.1 Nucleosynthesis — RD

RD summarized the science goals and results obtained so far. The statistics are still relatively low if data is spatially resolved for ^{26}Al. Complex background lines (not all understood) in the data are much stronger than the stellar signal. There is progress in understanding, e.g., by different instrumental background in different detectors. He continued with an overview of how different goals were matched by existing/planning observations. Key Programmes need good complementarity and should be assessed by a larger community.

The ^{44}Ti results and the possible value of observing the LMC and SN1987A were discussed briefly.

RD proposed to replace to the annual TAC by a bi-annual TAC-plus-community symposium making the decision process for and against KPs and the discussion thereof more transparent (Most KPs are multi-year; brief rejection statements are not appreciated). CW replied that the nucleosynthesis community could as well hold an independent symposium, create a 'roadmap' for nucleosynthesis and submit generally agreed proposals. The majority of the IUG seemed to prefer the latter approach.

6.2 ExtragalacticSources — EC

Swift is overtaking Integral on source detection. Thus, Integral should concentrate on interesting regions. But, as stated at last IUG, even 10 Ms on an arbitrary field would bring only a few sources according to EC's estimates. It would be more successful to concentrate on a few, especially promising areas.

EC emphasized that Integral should be used in the most efficient manner, explicitly including scans across the Galaxy.

RW noted that in their work they found more sources in the 3C273 field than predicted by EC and that Integral results on bright AGN will continue to be important. According to EC the difference lies mainly in what is still considered a 'significant detection'. With definitions on the same scale (e.g. probability of one false detection in a given area), the difference in expected number of sources is small.

RW expressed his concern that by now the larger fraction of time (within KPs) is allocated by the TAC panel chairs and not by the full TAC. CW pointed out that the panel chairs were free to request further support, if they felt it necessary.

6.3 Compact Objects — AG

Lacking a detailed AO-6 programme, AG reiterated the main goals identified for Compact Objects: TOOs; monitoring of the Galactic Bulge and Disk; specific observations of interesting sources and surveys on up to now little exposed regions. A discussion ensued if Key Programmes fulfill the needs of Compact Object science. EC noted that if the agreement will be reached on a joint program to fill low exposed regions then Russia might also join this program with its 25% share.

WH noted that it seems Integral should cover the galactic disk (vertically extended) both for nucleosynthesis and Compact Objects.

7 Future AOs, relative shares

WH pointed out that the IUG should give a recommendation on the split between Key Programmes and other Open Time and probably a different one than implemented in AO-6. An extended discussion ensued on the optimal fraction of Key Programmes in the Open Time and the accommodation of the Russian share. It was widely expressed that at least part of the Russian share should be counted as Key Programmes, even if only open to association by the Russian community.

Some members of the IUG argued for a somewhat reduced portion of Key Programmes in order to leave more room for Open Time proposals not easily accommodated by association to KPs. With the end of operations of RXTE the community of astronomers interested in high-energy binaries might turn to Integral if sufficient Open Time were available. In this vein EvdH pointed out that 'Galactic' KPs attract a factor of about 3 more associated proposals than those outside of the plane. In contrast, the majority of the IUG expressed the view that Integral's scientific return would be maximized by concentrating on large programmes while the typical science case for binary sources would be served with TOO observations or other satellites (e.g.,*Suzaku, Swift*). The statistics show an increased number of proposals in total with an increased share of Key Programmes.

The discussion took another turn when CK proposed that the TAC should consider Key Programmes, Open Time and TOO proposals at the same time, which then led to the idea to open all Open Time proposals for later association. After further discussion, continuing until Thursday morning, the following proposition emerged:

For future AOs there should be a first call for Open Time proposals defining the observation plan, these would mainly be large programmes or TOO proposals but some shorter, specific proposals would also be possible. These proposals – including the Russian ones – would then be evaluated and selected by the TAC. A second call, closer to the start of the AO, would then only ask for proposals to be associated with the selected programmes. The concern was raised that having two AOs per year would add overhead for the proposing astronomers, but the majority disagreed with this view, considering that the same work would simply be spread over two periods.

The final proposal for the distribution of the time per AO was that out of the total 24 Ms available, 18.3 Ms should be reserved for Open Time proposals all of which will allow for associated proposals. However, 6 Ms of the 18.3 will be reserved for Russian programmes, open for associated proposals only from the Russian community (see below).

From the remaining 5.7 Ms, 2 Ms shall be earmarked for TOO proposals. Another 2 Ms are reserved to account for carryover from previous AOs. Finally an additional slice of 1.7 Ms per AO for AO-7 through AO-9 is reserved to compensate the accumulated Russian under-return. The latter will be adapted each cycle to the actual situation as required.

After some further discussion, the IUG recommended a share of 80% for large programmes ($\geq$1 Ms) within the Open Time, applying for both the Russian and the non-Russian part. A minority felt that this did not leave enough time for non-TOO proposals with complex scheduling requirements.

It was agreed that the associated proposals on the Russian Key Programmes are for exclusive use by scientists affiliated with Russian institutes and universities for the 1-year proprietary period. Still, proposals from the Russian community to be associated with their programmes will be sent for review to the TAC in the same way as those for the rest of the world.

8 Once in a lifetime events — EC

EC returned to the discussion of "Once in a lifetime" events (OLE) brought up at the previous IUG meeting and which led to the special handling of nearby Supernova events.

He first presented simulated results for Supernovae in the LMC (type II) and at 5 Mpc (type Ia). Outside the Milky Way significant mass is found in the Magellanic Clouds and then again in Andromeda (M31) at $\sim$1 Mpc. Any further significant increase requires going to several Mpc distance. From the simulations observations seem worthwhile up to the distance of the LMC for SNII and up to Andromeda for SNIa.

EC advocates to have a pre-defined OLE committee (CW, WH, EvdH, RS) set up to react to such events. The ISDC would be required to make the – public – data promptly available. A policy for ATels (similar to Core Programme) within the INTEGRAL teams (instrument teams, ISDC, Russian Academy of Sciences) should be set up, while refereed publications should be unregulated.

In this proposal, such a committee should be able to override TAC recommendations on assigned sources and make initially proprietary data public. CK opposed this idea on behalf of the US User Group. The IUG in general also agreed that such a concept was not acceptable.

CW saw no need for a new tool, in case of a special event no time should be lost by referring to a committee – the Project Scientist can decide such changes already. The IUG in its majority saw no need for an additional formal structure.

Some discussion ensued about a possible policy for ATels. Efforts at the ISDC should concentrate on making data public instead of analyzing data. The required activities of the ISDC should be included in the TN to be prepared under action IUG-05-07.

9 Status Reports

9.1 ISOC — PK

The ISOC staff has been mostly stable since the last meeting. M. Cadolle Bel has taken over from R. Williams as Operations and Archive scientist. The AO-6 TAC was held at ESAC, the results of the programme approved by D/SCI are being implemented in the data base and PIs will soon be notified.

Some file transmission problems to MOC were traced to a faulty firewall configuration done without consultation by Corporate Informatics.

The roll-angle stepping discussed at previous meetings has been implemented since Nov 2007. Other changes include TM settings and software related to the AO process. There have been some problems with the stability of the Web application displaying scheduling information, which may now be resolved. The versions of the Flight Dynamics software still differ between ISOC and MOC for numerical problems found at ISOC.

TOOs are usually implemented within a few days, often driven by the observer request more than time worked. TOO on Mrk 421 implemented within a few hours in the evening of a major local holiday.

The user base of the ISOC Science Data Archive is slowly rising. A sudden burst in access since end of 2007 has been caused by the HEASARC VO Datascope page, which gives VO access to many observatories.

9.2 ISDC — RW

Swiss funding is approved to 2011 (2 MCHF/yr). Two additional more stable positions will be funded by the University of Geneva for a total of four.

The US funding will stop in January 2009. One developer (B. O'Neel) will continue on Swiss funding. The German contribution used to be 2 FTE. I. Kreykenbohm has left for Bamberg, to be replaced by C. Ferrigno. D. Petry leaving July, duties to be taken over by Xiaoling Zhang from MPW limited by the available resources.

99% of TM processed in RT, 99.5% of consolidated TM 96% good time for ISGRI, 100% SPI (ISGRI lower due to attitude questions). The reported good time can be $> 100\%$ if the planned pointings stop but Integral remains on source with the instruments running.

There is some data loss due to telemetry constraints when bright sources are in the FOV. The IBIS telemetry saturated, e.g., in revolution 682.

Action 06–2 on PK	**Due: end June**
Verify actual TM usage for IBIS and SPI and circulate	

Data is regularly distributed within $\sim$1 month and becoming public within a week or two from the one year period.

OSA7 was released in Sep 26, 2007 with 154 downloads in 8.5 months (more than for OSA6). The next release (OSA8) with an updated ISGRI calibration and improved JEM-X analysis software is expected for the end of the year. ISDC is concerned with the calibration follow-up over many years and the support from instrument teams.

The ISDC scientists (a handful of people) promoted Integral in various conferences with talks or posters. A very fruitful Swiss/Japanese INTEGRAL/Suzaku workshop was held in April.

RD inquired about the possibility to access SPI ACS data within minutes of a burst event, for immediate use with the new SWIFT and GLAST missions' burst data analysis. This is technically impossible for the standard data flow, but may be possible via the IBAS system using raw telemetry. This needs to be studied between MPE and ISDC.

A discussion ensued about the general delays in distributing NRT data. According to RW, the NRT data is moved to the Office Network at the end of each working day. SG stated that the Russian team frequently had to wait until the end of the revolution. Few observers request NRT access. The ISDC is also no longer manned all the time on weekends due to reduced manpower.

RW pointed out that on recent examples when Integral ATels were late relative to Swift this was by either members of the ISWT being too slow in responding or sometimes PIs refusing publication of an ATel. Some IUG members replied that scientists needed to be able to assess the data themselves before agreeing to such a publication.

Several members of the IUG requested that access to NRT data should be an automated process, e.g., by putting PGP-encrypted data on a server, following the RXTE example. Also the Swift data is normally available within a few hours.

Action 06–3 on RW **Due: 14 July**
Study options to automate distribution of NRT data to PIs, including changes to software and possibly to the documented requirements.

9.3 SPI — RD (for JPR)

The results of the last annealing were good and the resolution is kept under control. The next annealing is planned for the beginning of AO-7 (mid August) after consultation with ISOC and MOC.

IASW 4.3.4 has been implemented, saving on average 28.92% on single events telemetry, 15 packets per 8s cycle. The previously implemented filtering on multiple events has been deactivated again. The CPU load remains low (3–4%) and has no impact on the deadtime. The SPI team is now investigating also compression of multiple events.

9.4 IBIS — FL

Occasions of saturated telemetry in the last months were found to be caused by noisy pixel handling which became less efficient with increasing background. This was solved by updating a parameter.

The manpower situation in APC/Saclay group improving slightly F. Mattana arrived in March, M. Renaud will return in September. Unfortunately, D. Goetz will leave INTEGRAL in September, starting on SVOM/Eclairs, but remain around.

There is progress on ghost removal with three different approaches: (1) a better mask model; (2) taking into account the ISGRI non-uniformity and (3) the "bright mode" with special handling of bright sources. P. Laurent is still working on responses, new results are expected soon. An improved background map will be tackled when M. Re-

naud returns. Noone is currently working on the following topics considered less urgent: noisy pixels; SPIBIS; lower threshold; LUT2; spectral calibration (gain offsets & drifts).

Regarding the mask model FL showed a map of differences between the existing mask model and a measure of the mask derived from observations. Technical data from Valencia indicates a zone with glue between mask and mounting coinciding with the differences. For a better model detailed photos etc. from Valencia are lacking. MM and PK noted that they had contacted Valencia more than once and it would probably need a personal visit to extract more information. FL has developed a rough model with glue included. Improves SNR by 1–2% comparable with weak sources. The glue apparently has some effect up to a few 10 keV (may contain silver to be conducting). The composition is unknown, on request the manufacturer refused to give it. Possibly another sample could be bought and tested in the lab.

The non-uniformity could be measured by variations in pixel fluxes, but requires stable background in one revolution and correct background corrections if comparing data across years. The effect of the four ASICs is visible and can be measured within one revolution. One could also try to model effects of the Veto shielding. The team is now working on a uniformity map based on the ASIC data which will be transferred to ISDC once ready.

The "Bright mode" is a proposal to remove pixels illuminated by bright sources in analysis of weak sources. The method is being developed and under testing. Ghost residuals are suppressed, but there are still problems in the case of multiple bright sources.

For spectral responses, a full charge loss model is being implemented and tested. The long-term variations mentioned by RW do not appear to be caused by gain/offset drifts. Might be second-order effects. A new ARF will be provided, possibly in September.

The background structure is evolving on scale lower than 100 revolutions (few months), while OSA7 currently includes a single background map. A model could be created to predict the map. Another, more robust but more cumbersome approach is make series of maps for every 20 revolutions or so. Both approaches will be tried.

9.5 JEM-X — SB

The gain evolves as expected. The last HV reduction took place in revolution 623 (Nov 2007), the next is expected for the end of the year.

In past ∼2-3% of anodes have been lost per year in operations, but JEM-X 1 now has not lost another anode in the last 10 months.

The hardware trigger rate, driven by the particle background, seems to have passed its maximum in late 2007. Most background events are eliminated on-board increasing the deadtime somewhat.

The electronic efficiency as a function of gain is now understood. This knowledge will be implemented in the next OSA release improving imaging and mosaic results. Source detection is still limited by systematics in the understanding of the collimator.

The electronic efficiency is a function of PHA so with a variable gain its effects shift in energy.

The JEM-X team are considering to switch from JEM-X 1 to JEM-X 2 within a year or so. A convenient time slot would need to be discussed (start of an AO?). The two instruments perform very similar.

9.6 OMC — MM

Operations are smooth without any anomalies.

On April 14 OMC entered trigger mode to to a false GRB alert (a flaring IGR source), observing within 20.5 seconds. The results prove that the trigger mechanism works fine technically but still no GRB has fallen within its FOV – GRB 080603 was just on the edge.

The maximal CCD temperatures seem to have increased slightly during the last year as discussed in the IOCG. Currently this is no reason for worry, but will be monitored.

The CCD flatfield has stabilized. The process affecting the antireflection coating has now covered the whole surface. While the structures look impressive the total variations are within a few percent. A new calibration strategy needs to be implemented in order to improve the pixel-to-pixel correction.

The photometric calibration is still being improved. Using the photometric calibration stars and exposures of 10 s one sees the linearity starting to degrade at 7.2 mag and getting worse for brighter sources due to saturation effects. A very small deviation is found as function of position, slightly stronger in Y direction. This is probably caused by a slightly inclined CCD leading to a slightly variable PSF over the field. There is also a visible effect due to the undersampling of the PSF, making the effective PSF dependent on the centring of the source in the pixel. All these effects will be incorporated in the calibration for the next OSA release. Finally, the OMC team expects to reach 1% or better photometric accuracy (currently 2-3%).

MM continued with some examples of OMC results for SS Cyg and Her X-1 taken from the PhD thesis D. Risquez. This thesis is not yet available on the Web but will be soon (in Spanish with an English summary). The team was encouraged to publicize these results as many astronomers are still not aware of the opportunities.

10 Calibration Status

The status was covered already for IBIS (see above).

RD reported on the SPI status. A longer calibration was requested via the IUG and accepted by the PS. The results look good without surprises. The SPI team request another two revolutions to come closer to the goal of 1 Ms to constrain systematics.

Spectral cross-calibration results compiled by E. Jourdain (action IUG 05-04) were presented. The factors for normalisation across instruments come out very close to 1.0 now, with a slight deviation for JEM-X 2. These results were presented at the IACHEC meeting in Schloss Ringberg in May, where it was noted that the NH chosen (fixed for Integral) was slightly different than the one used by most X-ray instruments.

Further cross-calibration with Suzaku & Swift would be interesting. The Crab nebula was observed in March 2007 by RXTE, INTEGRAL, Swift, and Suzaku, but no common results have been published.

JW reported on Cyg X-1 observations including XMM, Chandra, RXTE, Suzaku, Integral, Swift and AGILE showing nice agreement in the main features in the data analyzed so far – most results had just been obtained. Spectra will be presented at the next IUG meeting. MM proposed to also look at the OMC data.

WH reported on the absolute timing status. Problems were found in the past and linked to use of predicted instead of true orbital data at MOC. Fixing this, some scatter remained but similar scatter was also seen with XMM and RXTE. An improved ephemeris based on RXTE PCA monitoring was derived which explains a large amount of the scatter (maximum variation 110 μs down from $\sim 270\mu$s. This ephemeris was in retrospect confirmed by the radio data. MOC should now start reprocessing all data taking into account consistently all known correction factors (several have been applied in the ISDC until now).

11 Calibration requirements

SPI, as previously stated, would like again two revolutions. This is supported by the IBIS team which would prefer both revolutions with rotation angle stepping (the current default). JEM-X will probably require another short interval with special settings. The detailed planning will be done as routine work before the observations expected in fall 2008.

12 Optimizing deep exposures

RW presented results of results obtained by excluding pixels illuminated by bright sources for Crab, Sco X-1 and the Galactic Center.

Stacking data for a total 'effective exposure' of 100 Ms, the background remains gaussian but slightly positive.

WH asked how this will be made available to the community. Possibly in OSA8 if the work progresses well.

13 INTEGRAL workshop Copenhagen 2008

SB presented the workshop website at `www.space.dtu.dk/integral08` powered by the *Indico* tool which handles abstract submission, etc.

The proceedings will be published electronically in Proceedings of Science. On-line access is free to everyone and not just to conference attendants. The access may be opened when a critical mass of papers is ready. A policy for refereeing should be developed with 'light' refereeing by the Scientific Advisory Committee being the preferred option.

Due to the electronic publication there is no requirement for a strict page limit, but one also wants to ensure concise contributions. After some discussion it was decided

to have a guideline of 6 pages for contributed and 12 pages for invited papers and a requirement to justify a length above this.

14 IUG role in larger community — RD

In reaction to the idea of querying users on their perception of Integral, which he discouraged, RD presented some ideas on how the IUG could help Integral.

He proposed that the IUG should monitor advances in INTEGRAL's key science areas through papers of the community versus INTEGRAL's contributions and plans, supporting CW's present work within the IUG, and discuss the findings at IUG meetings. This would need a common definition of quality criteria.

While it was generally felt that the community was being listened to at conferences etc, the idea of tracking advances in Integral's scientific fields (both by Integral and other satellites) was supported. JW volunteered to monitor Compact Objects, requesting help by T. Belloni. RD will do the same for Nucleosynthesis. No volunteer was found for Extragalactic Astronomy. WH will take this up with CW.

EvdH noted that people should supply CW with information for press releases. Possibly ISOC could point this out in notifications to observers.

15 Next Meeting

No place and time were set yet. The next meeting shall take place when the AO-7 results – under the new scheme — are known, which is expected to be some time in spring 2009.