

INTEGRAL User Group Meeting #26

WebEx, 1–2 December 2021

Minutes last updated on February 7, 2022

Attendants

Carlo Ferrigno	ISDC	CF
Ed van den Heuvel	Univ. Amsterdam	EvdH
Elisabeth Jourdain	IRAP Toulouse	EJ (invited)
Erik Kuulkers	ESA, ESTEC	EK (Project Scientist)
Guillaume Bélanger	ESA, ESAC	GB (Secretary)
Jean-Pierre Roques	SPI, IRAP Toulouse	JPR
Jochen Greiner	SPI, MPE Garching	JG
Jutta Huebner	ESA, ESOC	JH (invited)
Lara Sidoli	INAF, Milano	LS
Lorraine Hanlon	UCD	LH (chair)
Matthias Ehle	ESA, ESAC	ME (Mission Manager)
Margarita Hernanz	CSIC	MH
Miguel Mas Hesse	INTA Madrid	MM
Philippe Laurent	IBIS, CEA/APC	PL
Pietro Ubertini	IBIS, INAF Roma	PU
Richard Southworth	ESA, ESOC	RS (invited)
Roland Diehl	SPI, MPE Garching	RD (invited)
Sandro Mereghetti	INAF Milano	SM
Sergei Grebenev	IKI Moscow	SG
Sergey Sazonov	IKI Moscow	SS
Søren Brandt	JEM-X, DTU Space	SB
Wim Hermsen	SRON	WH

1 Welcome, Agenda, Actions, Recommendations

LH opened the meeting and welcomed the participants.

1.1 Agenda

Agenda was accepted with no additional items.

1.2 Actions

Action 20–1 on CF: Coordinate the activity to produce a report on cross-calibration

On Hold—Infrastructure for cross-calibration product generation is in place and several example sources will be processed e.g. allowing comparison of NuSTAR and INTEGRAL-SPI results (with R. Staubert, JPR is also involved). A report has not yet been generated. Waiting for finalisation of calibration files and OSA release.

Action 24-1 on PU: Call for calibration meeting in October 2020

On Hold—Meeting was put on hold due to limited reply after 1st invitation and later due to unknown extension status. Meeting planned for Summer 2021. This is linked to Action 20–1.

Action 21–2 on EK/LH: Maintain a set of publicly available slides on mission status to be used for presentations (due Feb 2020).

On-going—EK to upload and circulate link with IUG. New due date: Dec 2021.

Action 21–7 on EK/LH: Review status of documentation available to the public (due at IUG #24)

Closed—Linked to Action 21–2.

Action 21–10 on PL: Deliver Compton mode analysis software to ISDC. Some difficulties encountered with integration using OSA 11 libraries (due at IUG #24).

On-going—Software has been completed and tested with Cyg X-1 and Crab. Further test with a bright Compton source MAXI J1820+070 to be done. This is the brightest source of all sources observed since launch. Code will be shared with ISDC.

Action 21–12 on LH/EK: To clarify the status of the Crab cross-calibration paper (originally due July 2019).

Closed—PU updated IUG that LN has been working on the paper which is being finalised. CF concerned that if we are about to release a new version of OSA, makes little sense to publish a paper that will be outdated as soon as it is published.

Action 21–14 on PL: To begin writing ISGRI calibration report and report at IUG #24.

On Hold—Depending on OSA release

Action 21–15 on EK: To discuss with CF how to present the cross-calibration results and OSA11 results on the web

On-going—Pending work related to Action 21–12.

Action 22–7 on PL: Check mission documentation for agreement on software deliverables from instrument PI in regards to polarisation-specific software (due IUG #25).

Closed—PL found no references to polarization software in docs.

Action 23–4 on PL: Write a brief explanation of new calibration approach for IBIS to go on the OSA web-page (due December 2021)

On-going—Will be done this month.

2 **Presentations**

2.1 Mission Manager Report — ME (viewgraphs)

2.2 MOC Status Report — RS on (viewgraphs)

Special thank from the IUG to the mission and science operations team for their incredible work and continuous improvements to the operations.

2.3 Project Scientist Report — EK (viewgrapsh)

Special thank you to WH who after more than 20 years of official involvement as Mission Scientist for INTEGRAL since before launch, is attending his last IUG meeting.

PU suggested to show the increasing number of papers and ATels to highlight the continued importance, relevance and impact of the mission. Proposal over-subscription factor doesn't adequately capture the level of support and interest of the community in the mission.

2.4 SPI Status Report — JPR (viewgraphs) and JG (viewgraphs)

There was some discussion on whether the annealing should be done earlier than usual. Consensus is that it should follow the regular schedule.

2.5 JEM-X Status Report — SB (viewgraphs)

GB commented that he has been working closely with DTU (Gaurava and Jerome) to support addressing and documenting additional calibration activities. SB expressed DTU's appreciation for this support provided by ESA.

- 2.6 IBIS Status Report PU (viewgraphs) and PL (viewgraphs)
- 2.7 OMC Status Report MMH (viewgraphs)
- 2.8 ISOC Status Report GB (viewgraphs)
- 2.9 RSDC Status Report SG
- 2.10 NASA Status Report BC (viewgraphs)

2.11 ISDC Status Report — CF (viewgraphs)

LH: Do you have any idea of the current usage? VS: Not a high load. Tens of users from unexpected places.

LH: Do you have ideas of how to make MMODA even more useful for the community? CF: One idea for a public application would be to process the Gal Bulge data automatically and provide the results automatically on a public web page. Another idea is to make available aggregated products for public data. We have just started thinking about this question of making available products.

2.12 Cross-Calibration Updates — PU (viewgraphs)

Main highlight following analysis with different versions of OSA (10.2, 11, 11.1 and 11.2 beta on MMODA), for some sources there are important differences in the estimated exposure, rates and fluxes that need to be investigated.

CF: The cross-calibration effort is currently related to the validation of the new ISGRI calibration files. To compare results presented by PU yesterday on the inconsistencies between different OSA versions, it would be necessary to have the detailed workflows in order to be able to reproduce them and look at the details of the processing.

PU: IACHEC activities on cross-mission calibration continue.

JPR: Showed results of cross-calibration between SPI and NuSTAR where the spectral shapes are highly compatible, and the normalisation differences are between 15 and 20%. EJ: Recent improvements are bringing these normalisation factors closer. Important to concentrate on the internal INTEGRAL cross-calibration before focusing on other instruments.

CF proposed to define sources and time periods in which to perform comparison for the spectra from the INTEGRAL instruments which can be done quite easily in a fully traceable and reproducible way using MMODA. The software used in MMODA is exactly the same that has been provided to the instrument PIs and the same that will be released publicly. MMODA is purely a facility to analysis data using the standard OSA software.

VS emphasised that using MMODA allows an inspection of the details and thus provides the ability to find and correct bugs that are highlighted by errors encountered by users. This is made a lot easier through MMODA.

PU plans to organise an internal INTEGRAL calibration meeting in Roma.

2.13 INTEGRAL Science Legacy Archive (ISLA) Status Report — GB (viewgraphs)

The goal of ISLA is to provide a science-based platform for use of INTEGRAL data by nonspecialists. Considered important to maximise synergies between different tools already available e.g. MMODA, Datalabs. The focus should be on science papers and results and ensuring that the top-down design meets the bottom-up science interests. It was suggested to ingest the existing catalogue with 1800 sources with flux per science window. An archive users' group will be created to get an understanding of the products that different scientists will expect and want.

2.14 Extension Case for 2023–25 — EK

Points to be included:

- 1. 100% coverage with SPI-ACS, a sensitive instrument at high energies. INTEGRAL is the only mission with this capability.
- 2. COSI (launch 2025) is expected to have a factor of 2 better sensitivity.
- 3. SVOM launch in 2023
- 4. GECAM recently lost one of its two instruments.

Action 23–5 *on All: Request updated letters of support from national delegations for the INTEGRAL extension* 2023-2025

Open - due end March.

3 INTEGRAL 20th Birthday Conference

EK has inquired with hotels near ESTEC but has not found availability for the week of the 17th October 2022. Following some discussion on possible location, the consensus seems to favour Amsterdam.

4 15 Years of INTEGRAL Science

Volume is complete and available online. The introduction to the volume requires some minor corrections. The cost of soft/hard cover print of the whole volume is 43/49 euros. There is no difference in price based on volume. Free pdf access will be given for 50 days.

Idea to find out how many people would like a hard copy in order to not over-order. Another idea is to buy some for the conference next year and charge half the cost for people who want a hard copy.

5 AOB

PL mentioned that colleague in India is building a space museum, and the CEA will send them the INTEGRAL satellite model. ME suggested that we could have a media event when the museum is inaugurated.

RD mentioned this was the last IUG meeting he will be attending after the 2-year transition period to JG. The IUG thanked Roland for his essential contributions over many years.

6 Next Meeting

The next IUG meeting will take place at the end of June 2022.