

INTEGRAL Overall Mission Status Report

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IUG Meeting #27
10+11/05/2023

Reminder:

Apart from ...

- non-performing thrusters (unused since Jul 2020) => Z-flips to control angular momentum
- use of redundant power supply converter (B) for Optical Monitoring Camera (OMC) (since critical s/c anomaly 22 Sep 2021)
- change of operations for on-board antenna swap (via transponder swap; radio switch unused since 12 Sep 2021)

... the status and performance of the platform continuous nominally with all prime units still in use.

Extensions:

Oct 2020 SPC#164: extension confirmed for **2021-22** & **no further indicative extension**

Jun 2022 SPC#170: 3 months **extension to end-Mar 2022** to continue w/o interruption until SPC decision

... your lobbying goes here ...

Mar 2023 SPC#172: extended Science Operations **until end-2024**, to cover observing run O4 of the LIGO-Virgo-KAGRA GW detectors (24 May 2023 + 18 months – *plan as of 16 April 2023, next update 15 May*)

Then: SOC **2025-26 Post-Ops**; MOC monitoring for de-orbit optimization & monitoring until re-entry Feb 2029

- Guillaume Belanger: ISOC coordinator & Archive Scientist – in non-active status (aka sabbatical) since 1st March 2023
- Jan-Uwe Ness: acting coordinator, IUG secretary, until ~August 2023 (TBC, then back to New Athena)
- Peter Kretschmar: acting INTEGRAL Archive Scientist (synergy with XMM-Newton archive)
- New staff position “Science Operations Scientist & Archive Scientist for High-Energy Astronomy Missions” (shared; Archives, Calibration, Pipelines, future Management). Interviews later in May
- Support Services (from contractor companies in Frame Contract EFC2) continue being excellent: ISOC keeping expertise & more people involved (risk mitigation); working in 2-monthly Scrum-environment; EFC3 in prep (to start in 2025)
- Legacy Science Archive development by ESAC Science Data Centre (ESDC) continues and is getting support via EFC2.

INTEGRAL: New Safe Mode

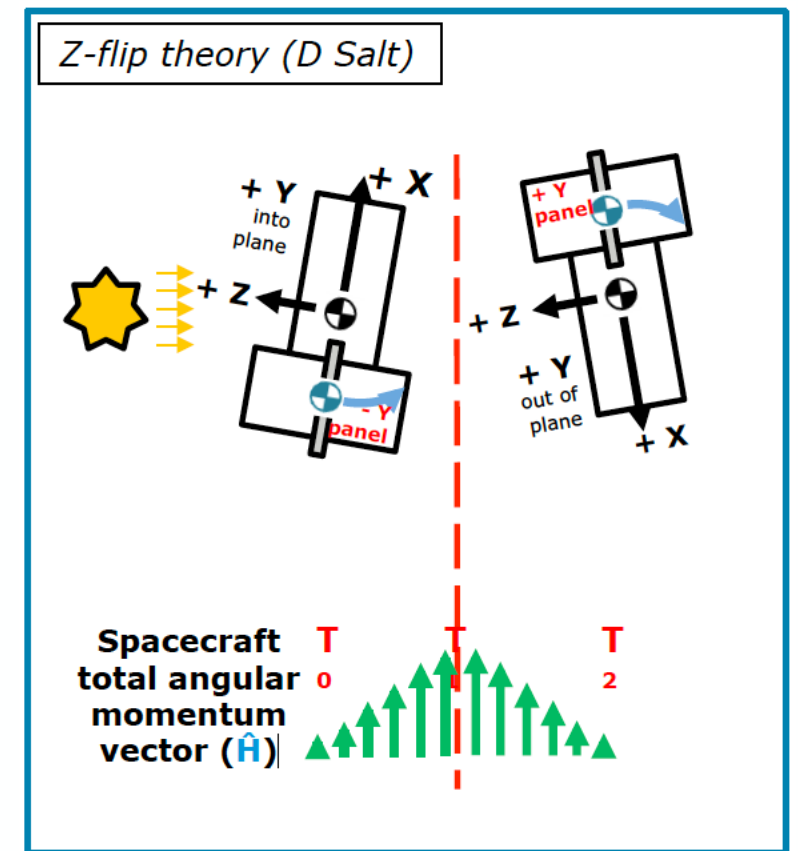
Sep 2021: Critical s/c anomaly showed: thrusters can no longer be used for Safe Mode Entry (s/c rotation to face Sun after emergency/anomaly & payload switch-off). We were very close to complete loss of the mission, see https://www.esa.int/Enabling_Support/Operations/Three_hours_to_save_Integral

Highest priority given to generate New Safe Mode (NSM) independent of propulsion subsystem. Sun pointing via Reaction Wheel speed commanding. An on-ground procedure for wheel commanding by SPACONs was already in place, but it is manual and needs groundstation contact!

NSM = sophisticated on-board s/w based safe mode, replacing a defunct h/w based safe mode that was in use for over two decades.

Mar 2023 (only 18 months later!) NSM was successfully commissioned (“open-heart surgery”) and deployed to operations under budget, see https://www.esa.int/Enabling_Support/Operations/Safe_at_last
(Study for XMM-Newton has been kicked-off)

- Ultra Fast ToOs (1-2 hours from approval to start of obs; also for Earth obs?) – final test pending
- Further improvements on Z-flip tools & processes (gravity torque maps; optimizations; pushing the boundaries)



- AO-21 preparations: documentation, tools, announcements
- INTEGRAL Science Legacy Archive (ISLA, dedicated talk tomorrow)

PostOps Plan under preparations (looking for synergies with plans for Gaia, SOHO, Cluster)

- 2 years baseline (2025 & 2026)
- Activities include:
 - ISLA; re-processing & catalogs (support needed from PIs and community!)
 - DataLabs (ESA) / MMODA (Uni. Geneva)?
 - OSA & calibration repository
 - Legacy Documentation, incl:
 - Data Processing, (Cross-)Calibration, Payload Observer's Manuals (PI Support is a MUST)
 - Helpdesk FAQ?
- Legacy Conference
- Lessons Learned exercise

- And then? **Legacy** to be continued via ESAC Science Data Centre (ESDC) & DataLabs(?)