

Script of New Project Scientist Introduction Speech

Dear INTEGRAL Community and beyond,

Some of you may know me, most of you perhaps not: My name is Jan-Uwe Ness, and after 1st September, I will be your new INTEGRAL Project Scientist. With this speech, I would like to not only introduce myself but reach out to you for your support during the last phase of this mission and offer my perspectives for your reflection.

Thanks to your [Support Letter](#) with 752 signatures, INTEGRAL Science Operations is funded until the end of 2024, and our Science Programme Committee (SPC) has decided that the post-operations phase shall start on 1. January 2025. AO21 is therefore the last call for proposals which makes it a bit different from previous AOs as we need to make sure to get the best out of this last call. The past achievements of INTEGRAL are impressive, and without a doubt, INTEGRAL will go down in history as an important mission. For this last AO we need to focus on science that really needs to be done before closing the mission. I hope you will be as active as ever (or more!) to send us your observing proposals, ideally highlighting in some way why the science you propose really needs to be done before INTEGRAL closes operations. Please make sure the reviewers understand quickly (via a concise abstract and punchy title) the new scientific insights of the proposal, and also what missions with longer life times cannot achieve.

We have risen from the ashes of running out of fuel and, thanks to our ESA Mission Operations colleagues, we are still around. As a reward to them and to your outstanding past scientific achievements: can we add to these achievements a firework of still *new* ideas?

I would like to invite you to engage in a research project of another kind: Search for science cases beyond of what has already been done with INTEGRAL. Can we squeeze out some unexplored potentials of INTEGRAL? Where might such unknown science cases be hidden? After more than 20 years of science operations - if there are any undiscovered science cases INTEGRAL could still explore – they will probably rest outside the gamma-ray community, so to find them we all would need to reach out to colleagues working in totally different areas of astronomy than your own.

This brings me to briefly introduce myself: You find my CV in the INTEGRAL newsletter announcing the change of Project Scientist. My research background includes early experience with numerical n-body simulations of interacting galaxies, the first [discovery of X-ray emission of Saturn](#), and High-Resolution X-ray Grating Spectroscopy of Stellar Coronae, and later Classical and Recurrent Novae and Super-Soft-Sources. Since late 2008, I work at the European Space Agency, mainly in Science Operations of the XMM-Newton mission, later also in INTEGRAL. I now take over from Erik the role of the INTEGRAL Project Scientist while in parallel playing an active role in the European XRISM Science Operations Centre (Proposal Handling, Helpdesk, Outreach). My prime hobby is to play church organ, and I am running a YouTube channel with some recordings.

While my science profile is diverse, you may miss any activities in gamma-ray astronomy. The reason I see my outsider role as an opportunity for you, the science community, is that the Project Scientist needs to primarily be a broker of the various, sometimes competing, interests of the diverse science community. The role of a broker is the more compromised the more one's own stakes can get into the way, and someone completely outside the community may at times be a better broker. Further my perspective can be important to shape the legacy archive to be as useful as possible to non-gamma ray astronomers.

If any unexplored science cases for INTEGRAL lie outside the gamma-ray community, my own roots give me the perspective to see which kind information could inspire the more general scientific public.

During my studies of the INTEGRAL mission, I read through all the press releases and was astonished by what can be achieved with INTEGRAL, and in all honesty, I share with you that I didn't realize INTEGRAL has achieved so important results such as the ultimate (and only) observational proof that Supernovae Ia are powered by

an exploding white dwarf. My conclusion from my own astonishment is that it is not totally unrealistic that even after more than 20 years of INTEGRAL science operations, there are still non-gamma ray astronomers who can be inspired by INTEGRAL's capabilities once they understand them better. Together with Erik, I have created a brochure with an overview of a small number of exemplary science highlights showcasing those INTEGRAL capabilities potentially inspiring new ideas. You can find this brochure in the INTEGRAL newsletter announcing the change in Project Scientist, and we hope you find it useful to promote the INTEGRAL mission to your colleagues. Please understand that not all highlights serve this goal because a result already achieved is something already done and regardless of importance not necessarily suitable to inspire new ideas.

Now, allow me to present some ideas how scientists beyond the gamma ray community, like myself, could be inspired, ideally to submit competitive AO21 proposals, but also to explore the INTEGRAL archive.

Firstly, three important barriers I see on the way are:

1. Non-gamma ray scientists may barely know anything about INTEGRAL and not expect that there is anything in for them learning about INTEGRAL's capabilities. It may cost some efforts to get their attention.
2. Given the late stage of the mission, non-gamma ray scientists may see it as a poor investment of their time to dive into the scientific capabilities in relation to their science interests. It will need some 'spoon-feeding' and simple messages to get them on board, and this is what the brochure could help to achieve: Quick access to INTEGRAL capabilities.
3. Non-gamma ray scientists may feel uneasy about the technical processes of assessing feasibility, data acquisition, and later data analysis.

Here some ideas of activities you could intensify - beyond of what you already do of course:

1. Organising inspiring institute colloquia with a short(!) presentation of the INTEGRAL science *capabilities* (not just technical specifications, feel free to use the brochure). In a climate of allowing more than usual expressing crazy, speculative ideas, allow a lot of time for your colleagues to discuss with you how their research could potentially benefit from INTEGRAL's capabilities. Mentioning the exceptionally large field of view with a high likelihood that their favourite sources may be in the field of potentially many INTEGRAL observations could be a good teaser. For example, sources near but not necessarily within the Galactic centre or bulge may have been monitored in X-rays with the JEM-X for over 20 years! Maybe you could look at such archival data to see whether there is anything interesting that could make them jump out of their chairs.
2. Offer a service to take the technical part of the preparation of a proposal off their shoulders, e.g., as an AO21 proposal co-I, you may write the feasibility section. Further, assure them you will be available for any needed coordination with the ESA planning team for optimizing the observation strategy and later the data analysis when publishing the results.
3. You could also help non-gamma scientists publishing archival data containing their favourite sources.

By the way: important performance indicators are publication rate and communicating important results to the larger scientific public and far-reaching results to the general public. Please continue to let us know of any results that help showcasing INTEGRAL's capabilities.

And here is what ESA in general and I specifically can do to help:

1. While your first contact point are of course your representatives in the INTEGRAL User Group (IUG), I am always available for any comments, suggestions, questions. You can contact me directly via email, and we can coordinate a personal chat. Any actions will of course be coordinated with the IUG.

2. I can come and visit your institute if you feel an ESA representative could put important weight behind your initiatives. This depends on time and financial resources, but at least a virtual visit should be possible.
3. Support with announcements of workshops and outreach activities plus create and publish press releases.

I am sure this is not the first attempt to branch out, and one may believe no new science cases can be found. Fine, but are we sure that's it? If making one last effort without success, then we will be really sure that we have reached the scientific limits of INTEGRAL which would make it easier for us to come to terms with the end of Science Operations and let go.

In any case, we have more than one year to go together with an active mission, plus two more years of post-science operations, and I hope I can count on your vast experience which can give you a lot of weight in shaping the remaining future of INTEGRAL, but it also gives you a lot of responsibility. I thus count on your support and would be really happy to hear from you and get your feedback. I look forward to fruitful collaboration for the benefit of INTEGRAL specifically, Gamma-ray Astronomy in general – and maybe even Astronomy universally.