

IAU Commission H3 2022 Annual Report, compiled by Orsola De Marco (President).

28 March 2023

Committee: David Jones, Magda Arnaboldi (Vice President), Isabel Aleman, Bruce Balick, Albert Zijlstra (immediate past President), Toshiya Ueta.

H3 is an inter-division commission (H and G).

The two main activities of the committee in 2022 are the organisation of the IAU Symposium 384 and the production of a community paper on the first JWST results that was published in Nature Astronomy.

IAUS 384: Planetary Nebulae: a Universal Toolbox in the Era of Precision Astrophysics

The symposium was approved in May 2022 and will take place in Krakow, Poland in September 2023 (<https://iaus384-pne.ncac.torun.pl/>). Most of the activities associated with the organisation have taken place in late 2022 and early 2023. Starting with the definition of the scientific programme, we then proceeded to advertise the symposium by producing a first announcement via email as well as on sites such as the AGB and AstroPAH newsletters, and the Facebook PN group. Almost all invited speakers have now confirmed (we have reached good gender balance and geographic distribution) and we are about to issue the second announcement. Pre-registration is open: <https://iaus384-pne.ncac.torun.pl/registration/>.

Nature Astronomy Community Article: The Messy Death of a Multiple Star System and the Resulting Planetary Nebula as Observed by JWST

The second activity was the production of a community paper that was initiated by the commission H3 in a series of emails that aimed to address a peculiarity in the Early Release Observation of JWST-observed nebula NGC3132, namely the presence of a strong IR excess around the central star. These discussions lead to Albert Zijlstra suggesting a short community paper. The paper was coordinated on Slack by De Marco and quickly accrued 69 astronomers from around the world. The Nature Astronomy Editor was consulted and he was enthusiastic about the initiative and the paper. We submitted the paper in October. The paper was published on December 8 (<https://www.nature.com/articles/s41550-022-01845-2>), making the front page of the magazine (<https://www.nature.com/natastron/volumes/6/issues/12> ). The interesting story of how the paper came together can be found in this Nature Astronomy Blog: [https://astronomycommunity.nature.com/posts/a-firmament-of-astronomers-crowd-over-the-jwst-image-of-the-southern-ring-nebula?channel\\_id=behind-the-paper](https://astronomycommunity.nature.com/posts/a-firmament-of-astronomers-crowd-over-the-jwst-image-of-the-southern-ring-nebula?channel_id=behind-the-paper)

A number of press releases were issued by several institutions, starting with STScI and echoed by many of the authors institutions with text available in several languages. New images and diagrams were produced by STScI for the press release. Several news outlets picked up the release and several of the authors were interviewed on TV and radio.

Here are some links to published popular articles.

New Scientist:

[https://protect-  
au.mimecast.com/s/UYQBC6XQ68fYzkD4Cpi2Y6?domain=newscientist.com/](https://protect-au.mimecast.com/s/UYQBC6XQ68fYzkD4Cpi2Y6?domain=newscientist.com/)

Physics Today:

<https://physicstoday.scitation.org/doi/10.1063/PT.6.1.20230112a/full/>

Astronomy:

<https://astronomy.com/news/2022/12/extreme-stripping-caused-messy-birth-of-the-southern-ring-nebula>

Phys.org:

<https://phys.org/news/2022-12-messy-death-star-webb.html>