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- **To:** Division D High Energy Phenomena and Fundamental Physics
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\*\*\*IAU Division D Newsletter, January 2022\*\*\*

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\* Congratulations to the IXPE team for the successful launch on December 9th!

The Imaging X-ray Polarimetry Explorer (IXPE) was successfully launched on 9 December 2021 into a 540-km circular orbit at 0° inclination. During IXPE's two-year mission, targets such as active galactic nuclei (AGN), microquasars, pulsars and pulsar wind nebulae, magnetars, accreting X-ray binaries, supernova remnants, and the Galactic center will be studied. IXPE is the first satellite dedicated to measuring X-ray polarization.

IXPE's payload is a set of three identical imaging X-ray polarimetry systems mounted on a common optical bench and co-aligned with the pointing axis of the spacecraft. Each system operates independently for redundancy, and comprises a 4 m (13 ft) focal length mirror module assembly that focuses X-rays onto a polarization-sensitive imaging detector developed in Italy. The focal length is achieved using a deployable boom. The Gas Pixel Detectors (GPD) utilize the anisotropy of the emission direction of photoelectrons produced by polarized photons to gauge with high sensitivity the polarization state of X-rays interacting in a gaseous medium. Position-dependent and energy-dependent polarization maps of such synchrotron-emitting sources will reveal the magnetic field structure of the X-ray emitting regions. X-ray polarimetric imaging better indicates the magnetic structure in regions of strong electron acceleration. The system is capable of resolving point sources from surrounding nebular emission or from adjacent point sources.

More info on IXPE can be found here:

The primary mirror of JWST, the Optical Telescope Element, consists of 18 hexagonal mirror segments made of gold-plated beryllium, which combine to create a 6.5 m (21 ft)-diameter mirror – considerably larger than Hubble's 2.4 m (7.9 ft) mirror. JWST will observe from long-wavelength visible light (red) through mid-infrared (0.6–28.3  $\mu\text{m}$ ). This will enable it to observe high-redshift objects that are too old and too distant for Hubble. The telescope must be kept very cold to observe in the infrared without interference, so it will be deployed in space near the Sun–Earth L2 Lagrange point, about 1.5 million kilometers (930,000 mi) from Earth. A large sunshield made of silicon- and aluminum-coated Kapton will keep its mirror and instruments below 50 K.

Development began in 1996 for a launch that was initially planned for 2007. There were numerous delays, including a major redesign in 2005. Construction was completed in late 2016, at which point an extensive testing phase began. JWST was launched at 12:20 UTC on 25 December 2021 by an Ariane 5 launch vehicle from Kourou, French Guiana. The telescope was confirmed to be receiving power, and as of December 2021 is traveling to its target destination.

More info on JWST can be found here:

<https://www.jwst.nasa.gov/>

<https://esawebb.org/>

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#### \* NuSTAR Cycle 8 Call for Proposals

This NASA Research Announcement (NRA) solicits General Observer (GO) proposals for NuSTAR. Approximately 8.5 Ms of time will be available in the observing period June 1, 2022 - May 31, 2023, depending on the outcome of the NASA Astrophysics Senior Review process in 2022. It is anticipated that approximately \$4M in funding will be made available to support the analysis of targets accepted at priority L, A, B or C. Priority C targets will be observed on a "best-effort" basis. Target proposals will be considered from both US and foreign PIs. NuSTAR data from approved GO program observations (including peer review approved ToO observations) have a nominal six-month exclusive-use period commencing at the time of receipt of the processed data by the observer. Only PIs affiliated with, and located at, a US institution will be eligible for funding for accepted NuSTAR proposals through NASA. As part of the NuSTAR Cycle 8 program, up to 1.5 Ms of XMM observing time, up to 300 ks of Swift observing time, and up to 250 ks of NICER observing time will be made available for coordinated observations with NuSTAR.

Quasars and Galaxies through Cosmic Time

January 24-27, 2022

Virtual

[https://www.astro.udp.cl/Quasars\\_and\\_Galaxies\\_through\\_Cosmic\\_Time/](https://www.astro.udp.cl/Quasars_and_Galaxies_through_Cosmic_Time/)

Rencontres de Moriond: Cosmology 2022

January 23-30, 2022

La Thuile, Italie

<https://moriond.in2p3.fr/2022/Cosmology/>

Rencontres de Moriond: Gravitation 2022

January 30 - February 6, 2022

La Thuile, Italie

<https://moriond.in2p3.fr/2022/Gravitation/moriond-gravitation-2022.html>

Exploring the Transient Universe with the Nancy Grace Roman Space Telescope

February 8-10, 2022

Pasadena, USA (hybrid online)

<https://conference.ipac.caltech.edu/romantimedomain/>

The present and future of Astronomy - A critical look at hiring, evaluation processes, the way we do science and our role in society

February 14-18, 2022

Virtual

<https://www.eso.org/sci/meetings/2022/ASTRO2022.html>

The dawn of astrometric microlensing, from cold exoplanets to black-holes

February 21-23, 2022

Paris, France (hybrid online)

<https://www.cold-worlds.com/nouvelles-scientifiques/workshops-2022/>

HEAD19: The 19th Divisional Meeting of the High Energy Astrophysics Division of the AAS

March 13-17, 2022

Pittsburgh, USA

<https://aas.org/meetings/head19>

Large-Volume Spectroscopic Analyses of AGN and Star Forming Galaxies in the Era of

Intermediate-mass black holes: new science from stellar evolution and cosmology  
April 30 - May 3, 2022  
San Juan, Puerto Rico  
<https://sites.northwestern.edu/imbh>

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If you wish to share with IAU Division D any information about matters that may be relevant to the activities of Div D Members, please send an e-mail to [rea@ice.csic.es](mailto:rea@ice.csic.es). This will appear in the next Newsletter, which will be sent out around February 1, 2022. Thank you in advance for your inputs, and best regards.

Dr. Nanda Rea, acting Scientific Secretary of IAU Division D Steering Committee  
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