

Questions

- How can you separate linear and circular polarization?
 - IXPE measures only linear polarization.

- I think it's probably critical to understand how much SNR you need to reliably detect polarization at different levels -- it's not something x-ray astronomers are used to thinking about obviously, and it's obviously not as straightforward as a simple detection experiment for total intensity.
 - Absolutely! *All proposals need to have a calculation of the MDP.* Polarimetry needs lots of photons as shown in the example above. Many of the prime mission observations are several 100 ks up to 1 Ms. Don't be shy about asking for the exposure time that you need to do your science.

- Statistics of polarization errors?
 - Stokes parameters are Gaussian distributed. Polarization degree (PD) and angle are not.
 - PD is always positive, which can be misleading, particularly for low significance detections.

Questions

- What are some uses outside the IXPE intended use?
 - Priority will be given to proposals to measure X-ray polarization which is the intended use and the unique capability of IXPE. Other missions are better suited for other uses such as imaging, spectroscopy, or timing/monitoring.
 - If the question was regarding novel targets for polarimetry, i.e. outside the science areas covered in the prime mission, then we welcome new ideas. Detection of polarization from a new class of source would be exciting and make for a strong proposal.

- Interest in X-ray polarimetry of Be/X-ray binaries at different X-ray luminosities, specially at low X-ray luminosities, so that we can unveil basic changes in the outflows and magnetic field structure.
 - This is an excellent science topic for IXPE. Some papers:
 - X-ray polarimetry of X-ray pulsar X Persei: another orthogonal rotator? Mushtukov, A. et al. (2023) – polarization up to 30% at 8 keV.
 - X-ray pulsar GRO J1008–57 as an orthogonal rotator, Tsygankov, S. et al. (2023) – polarization up to 15% at certain pulse phases, magnetic obliquity ($\sim 74^\circ$) which makes it a nearly orthogonal rotator .
 - Need to check MDP for fluxes seen at low luminosities.

Questions

- Latest IXPE science results?
- This could fill this whole workshop. We prefer to use the time to help you write good proposals, so you win time and produce your own IXPE science results.
- A recent science talk is available at Astrophysics Advisory Committee web site
https://science.nasa.gov/files/science-red/s3fs-public/atoms/files/Kaaret_ixpe_apac_June2023.pdf
- Are people interested in a virtual talk on IXPE science or a series of talks?