

Astronomical X-ray Polarimetry as a diagnostic for questions of fundamental Physics. What we learned from the Imaging X-Ray Polarimetry Explorer (IXPE)..

Thursday 18 July 2024 12:00 (20 minutes)

In half a century of predictions on the potential of X-Ray polarimetry, we have encountered ideas—sparse yet not infrequent—on how it could provide insights into several fundamental physics problems. These include birefringence or strong-gravity effects as evidence of photon propagation in extreme magnetic or gravitational fields, anomalies in propagation over large distances due to Lorentz Invariance Violations, or signs of the existence of Axion-Like Particles. Some measurements were proposed for individual objects, while others pointed to a modifications of a distribution. Nowadays, we can benefit from two years in orbit of IXPE, the first space observatory entirely dedicated to polarimetry of celestial X-ray sources in 2-8 keV energy band, resolved in time, energy, and angle. IXPE observed about 60 sources across almost all classes. In this talk, we will review some of the proposed measurements of fundamental physics and how they align with the world unveiled by IXPE.

Alternate track

1. Detectors for Future Facilities, R&D, Novel Techniques

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