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India's first polarimetry mission may be launched this month: Isro

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NEW DELHI: The Indian Space Research Organisation is likely to launch the country's first polarimetry mission by December 28, senior scientists from the space agency said on Sunday.

"India is set to launch its first X-Ray Polarimeter Satellite (XPoSat) aiming to investigate the polarization of intense X-Ray sources. While space-based X-Ray astronomy has been established in India, focusing predominantly on imaging, time-domain studies, and spectroscopy, this upcoming mission marks a major value-addition," Isro said in a statement.

XPoSat is India's first and the world's second space mission to measure the polarisation of light. Polarimetry is a powerful tool that allows astronomers to infer information about celestial objects, from passing comets to distant galaxies. Isro scientists said the mission is crucial as it will help them measure emissions from astronomical sources like black holes, neutron stars, and active galactic nuclei.

Such emissions are mostly tracked by studying the chemical make-up (using a spectroscope) and the time it takes them to travel a distance. Isro in its latest mission document said XPoSat spacecraft is designated for observation from low earth

orbit—non-Sun synchronous orbit of around 650km altitude, low inclination of six degrees—carrying two scientific payloads.

"...With these two payloads, the XPoSat mission is capable of simultaneous studies of temporal, spectral, and polarization features of the bright x-ray sources. The mission objectives include measurement of x-ray polarization in the energy band of 8-30 keV emanated from x-ray sources; long-term spectral and temporal studies of cosmic x-ray sources in the energy band of 0.8-15 keV... The payloads onboard XPoSat will observe x-ray sources during its transit through Earth's shadow—during the eclipse period," Isro said.