XPoSat satellite

Published On: 02-01-2024

Why is in news? PM expresses happiness over successful launch of XPoSat satellite

XPoSat (X-ray Polarimeter Satellite) is **India's first dedicated polarimetry mission** to **study various dynamics of bright astronomical X-ray sources in extreme conditions.**

The spacecraft will carry **two scientific payloads** in a low earth orbit.

The primary payload **POLIX (**Polarimeter Instrument in X-rays) will measure the polarimetry parameters (degree and angle of polarization) in medium X-ray energy range of **8-30 keV photons** of astronomical origin.

The **XSPECT** (X-ray Spectroscopy and Timing) payload will give spectroscopic information in the energy range of **0.8-15 keV.**

The mission **life is expected** to be approximately **five years**.

The payloads onboard XPoSat will observe the X-ray sources during the spacecraft's transit through the Earth's shadow, i.e., during the eclipse period.

It will be launched by the **Polar Satellite Launch Vehicle (PSLV)** from the Satish Dhawan Space Centre in Sriharikota.

The emission mechanism from various astronomical sources such as **blackhole, neutron stars, active galactic nuclei, pulsar wind nebulae etc.** originates from complex physical processes and are challenging to understand.

While the spectroscopic and timing information by various space based observatories provide a wealth of information, the exact nature of the emission from such sources still poses deeper challenges to astronomers.

The polarimetry measurements add two more dimension to our understanding, the **degree of polarization and the angle of polarization** and thus is an excellent diagnostic tool to understand the emission processes from astronomical sources.

The polarimetric observations along with spectroscopic measurements are expected to break the degeneracy of various theoretical models of astronomical emission processes. This would be the major direction of research from XPoSat by Indian science community.