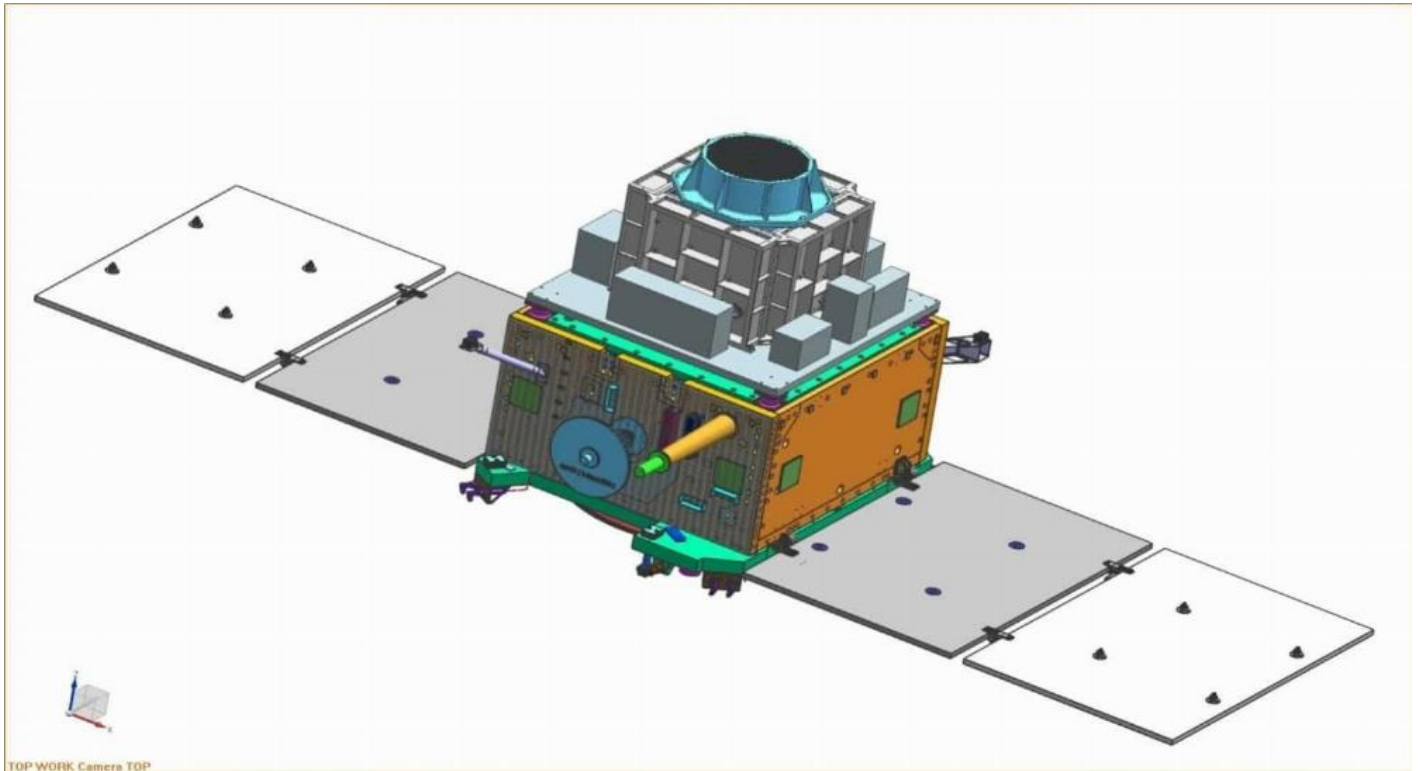


XPoSat

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What is the XPoSat mission?

- XPoSat will study various dynamics of bright astronomical X-ray sources in extreme conditions.
- It has been billed as **India's first, and only the world's second polarimetry mission** that is meant to study various dynamics of bright astronomical X-ray sources in extreme conditions.
- The other such major mission is **NASA's Imaging X-ray Polarimetry Explorer (IXPE)** that was launched in 2021.

How are X-Rays witnessed in space?

- X-rays have much higher energy and much shorter wavelengths, between 0.03 and 3 nanometers, so small that some x-rays are no bigger than a single atom of many elements.
- The **physical temperature of an object determines the wavelength of the radiation it emits. The hotter the object, the shorter the wavelength of peak emission.**
- X-rays come from objects that are millions of degrees Celsius — such as pulsars, galactic supernova remnants, and black holes.
- Like all forms of light, X-rays consist of moving electric and magnetic waves. Usually, peaks and valleys of these waves move in random directions. Polarised light is more organised with two types of waves vibrating

in the same direction.

Q1) What's inside the black hole?

A black hole is anything but empty space. Rather, it is a great amount of matter packed into a very small area – think of a star ten times more massive than the Sun squeezed into a sphere approximately the diameter of New York City.

Source: What is XPoSat, India's first polarimetry mission?

Source: <https://vajiramandravi.com/current-affairs/xposat/>

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