



NASA's Imaging X-ray Polarimetry Explorer

Why in News?

Recently, researchers studied a [supernova explosion](#) that occurred over **450 years ago** using [NASA's Imaging X-ray Polarimetry Explorer \(IXPE\)](#).

- **The explosion, called Tycho**, was visible to people on **Earth in 1572**, and the shock wave from the blast is still propagating through the cosmos.

What is Tycho?

- Tycho is classified as a **Type Ia supernova**, which occurs **when a [white dwarf star](#) shreds its companion star**, triggering a violent explosion and sending debris hurtling into space at tremendous speeds.
 - **Tycho released as much energy as the Sun** would emit over **ten billion years** and blasted particles out into space near the speed of light.
- Researchers used IXPE to **reveal the [magnetic field geometry](#) close to Tycho's** shock wave to investigate further how particles are accelerated there and **to study polarised X-rays from the supernova remnant.**

What is Imaging X-ray Polarimetry Explorer?

- **About:**
 - **IXPE Space Observatory is a joint effort of NASA** and the **Italian Space Agency**.
 - It studies “the **most extreme and mysterious objects in the universe - supernova remnants, supermassive [black holes](#), and dozens of other high-energy objects.**”
- **Significance:**
 - It will help **observe polarised X-rays from neutron stars and supermassive black holes.**
 - Measuring the polarization of X-rays traces the story of where the light came from, including the **geometry and inner workings of its source.**
 - It will help scientists understand how black holes spin and their location in the past and also **unravel how pulsars shine so brightly in [X-rays](#).**

UPSC Civil Services Examination, Previous Year Question (PYQ)

Q. Which of the following pairs is/are correctly matched? (2014)

	Spacecraft	Purpose
1.	Cassini-Huygens	Orbiting the Venus and transmitting data to the Earth
2.	Messenger	Mapping and investigating the Mercury
3.	Voyager 1 and 2	Exploring the outer solar system

Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (b)

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