

3. Imaging X-ray Polarimetry Explorer

Why in News?

- Researchers has recently studied a supernova explosion that occurred over 450 years ago using NASA's Imaging X-ray Polarimetry Explorer (IXPE).

Highlights

- 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.
- 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.
- 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."
- 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.