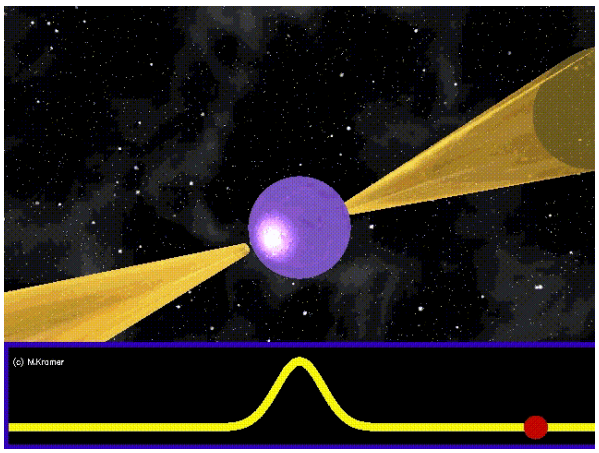
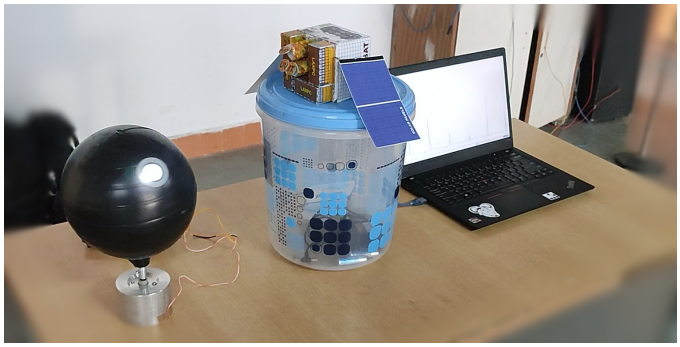
Schematic Model of Pulsar Observations with AstroSat

Pulsars are the remnants of massive stars–called Neutron Stars–which have reached the end of their usual life cycle of producing starlight from hydrogen fuel. These are found in nature to possess extremely high magnetic fields, and spin at extremely fast rates, making multiple complete revolutions within one second. Due to the extremely high magnetic fields, Pulsars emit radiation from their poles, and when the rotational axis and the magnetic axis of a pulsar are misaligned, the radiation appears to an Earthbound observer like the beam of a lighthouse (assuming that the beam of emission is pointed towards the Earth). Due to their exceptional stability and regularity in producing such pulses, Pulsars are also known as galactic time keepers and are some of the most precise clocks found in nature.





This schematic model shows the observation of the pulses from a “Pulsar” using the AstroSat, India’s very own Space-based Astronomical observatory. AstroSat has multiple instruments which can be used to study Pulsars in great detail, including the UVIT (Ultra Violet Imaging Telescope), the SXT (Soft X-ray Telescope) and the CZTI (Cadmium Zinc Telluride Imager).