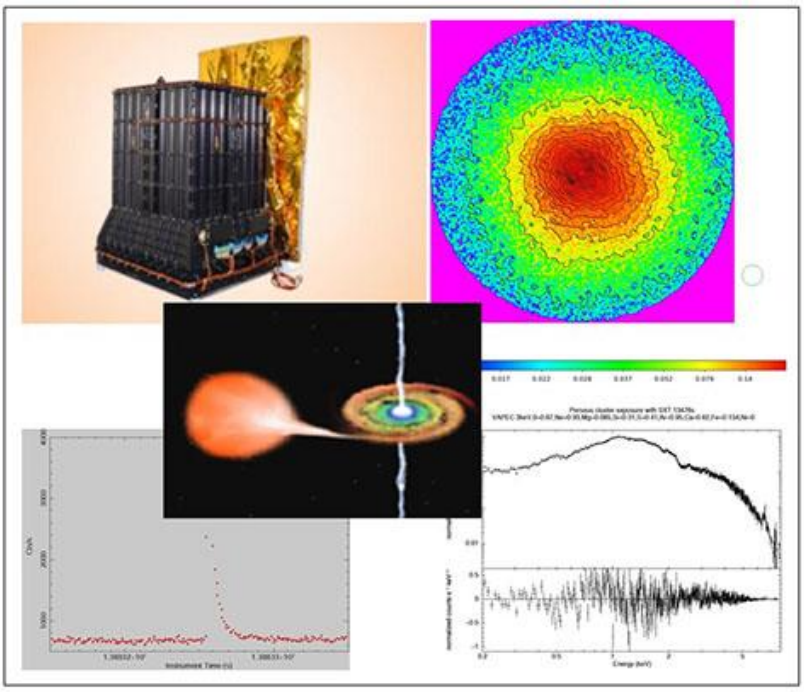
TIFR celebrates first year of successful operation of AstroSat



Tata Institute of Fundamental Research celebrates the completion of the first year of the successful operation of India's first Space Observatory: AstroSat, on September 28th, 2016.

TIFR has contributed the maximum hardware for this satellite compared to any other institution, in the form of three X-ray astronomy payloads: CZTI, LAXPC and SXT (Cadmium-Zinc-Telluride Imager, Large Area X-ray Proportional Counters, Soft X-ray Telescope) all of which are working very well and producing a wealth of data. In a special function on this occasion at TIFR, first results from these three landmark telescopes and detectors will be presented by the scientists that led the design and development of these instruments.

On the first day of operation of AstroSat scientific payloads, a gamma-ray burst (GRB 151006A) was serendipitously observed and there were hints of hard X-ray polarisation in the data. Subsequent observations and detailed analysis showed very exciting results on change of polarisation angle as a function of pulse phase in the Crab pulsar and spectral state dependent polarisation in the black hole source Cygnus X-1. This work will be presented by Professor A.R. Rao.

The Soft X-ray focusing Telescope has observed a number of sources, as part of its performance verification plan. These range from sun like active stars, accreting magnetic white dwarfs, supernova remnants, X-ray binaries with accreting neutron stars and black-holes, active galactic nuclei and clusters of galaxies. Some of the results will be presented, and the low background and excellent spectral capabilities of the SXT will be highlighted, by Professor K.P. Singh.

Prof. J.S. Yadav will present recent results from the LAXPC instrument, comparing its performance with similar X-ray space instruments worldwide. The LAXPC instrument has performed well in orbit and has achieved all parameters proposed initially and has observed a variety of X-ray sources in the sky. It has observed for the very first time rapid variability of high energy X-ray emission from a black hole system and high frequency QPO in a neutron star X-ray binary. First results from some of these observations will be presented, to highlight the unique timing and spectral capabilities of the LAXPC instrument.

After careful performance verification of the instruments on board AstroSat, Indian Scientists are now using AstroSat to unravel the mysteries of the Universe. These findings are just the beginning of a large number of such discoveries that AstroSat is expected to make.