

### **Astrosat Baseline Science – *A definition and intent.***

For the Astrosat Science meeting on Feb 6 -7, 2014, at IIA, Bengaluru

Astrosat Baseline Science is defined as the prioritized early science to be carried out by Astrosat, with the objective of showcasing science results and mission capabilities within the first year after launch. Baseline science results will also be used to provide to ISRO a measure of the success of the mission.

Astrosat Baseline Science will be a subset of the Guaranteed Time (GT) science to be carried out by the science teams of different instruments. It is likely that in several such science topics there will be interest across different science teams, and these observations may then be jointly carried out using partial share of the Guaranteed Time of the respective instruments. Of all the GT observations planned by the instrument teams, some will be prioritized by consensus to be included in the Baseline Science programme, and be carried out during the first year after launch, and immediately after the PV phase.

The Science Working Group (SWG) of Astrosat has been discussing possible baseline science programmes for some time now. A few general areas have been identified and SWG representatives for these areas have been assigned (see Annexure). Detailed feasibility studies, target identification and expected results against which the actual observations will be benchmarked are currently being worked out.

Recently the science teams have been officially constituted for different payloads. Members of these science teams are the custodians of the full guaranteed time on Astrosat. All the members of the science teams are expected to participate in the Astrosat Baseline Science programme, by contributing to science cases, analysis and simulation tools, feasibility studies, target selection and eventually the rapid processing and interpretation of the data.

The meeting on 6-7 February 2014 is intended for discussion with the science team members their individual science interests and to identify what contributions they are ready to make towards Astrosat Baseline Science. It is expected that working groups on different identified science topics will be formed at this meeting, for detailed study of the science case and feasibility. The results of these studies will be used at a future meeting to shortlist the Astrosat Baseline Science programmes and to decide on how the observing time for them will be shared between the GT of different instruments.

(prepared by Dipankar Bhattacharya & KP Singh on behalf of Astrosat SWG)

**Annexure: Assigned SWG representatives for potential Astrosat Baseline Science areas**

1. AGN - G. C. Dewangan, K. P. Singh, Gordon Stewart
2. Cataclysmic Variables - S. Seetha & K. P. Singh  
Magnetic CVs: K. P. Singh, Annapurni S. & Girish V.
3. Magnetars - B. Paul & D. Bhattacharya
4. Cyclotron line studies – D. Bhattacharya & B. Paul
5. NS LMXBs – B. Paul & Sudip Bhattacharyya
6. UVIT science – S. K. Ghosh & Annapurni S.
7. Clusters of galaxies: G. C. Dewangan, Annapurni S., G. Stewart & K P Singh
8. Transient discovery with LAXPC scan mode observations – B. Paul & Sudip Bhattacharyya
9. LMXBs with black holes : G. C. Dewangan & S. Seetha
10. Stellar Coronae: Lalitha S., K.P. Singh
11. Isolated Neutron Stars: Sudip Bhattacharyya