Goa University

Discipline of Physics

School of Physical and Applied Sciences

Report on Advanced Astrosat Data Analysis Workshop

1. Title of the Event/program	Advanced Astrosat Data Analysis Workshop
2. Date and Time	9th to 15th January 2023 from 9:00 am to 5:30 pm
3. Mode of conduct (Physical/Online)	Physical
4. School/ Directorate/ Section	School of Physical and Applied Sciences (SPAS)
5. Collaborating Agency/School/Directorate	AstroSat Science Support Cell (ASSC) IUCAA and ISRO Bangalore
6. Detail of the Resource Person (Brief biodata)	**1. Prof. Ranjeev Misra (IUCAA Pune)** Prof. Misra's research area of interests are in high energy astrophysics which includes accretion disk theory, study of spectral and timing properties of X-ray binaries, ultra-luminous X-ray sources, large-scale radio/X-ray jets of AGN and, lately, gamma-ray bursts. His research involves theoretical modeling as well as X-ray data analysis and interpretation. Prof. Misra is also interested in cross-disciplinary studies like non-linear dynamics of astrophysical systems, non-linear time series analysis and statistical classificiation schemes of astrophysical sources. **2. Prof. Gulab Dewangan (IUCAA Pune**) Prof. Dewangan's research interests are in X-ray astronomy, X-ray study of active galactic nuclei, ultra-luminous X-ray sources and X-ray binaries. His primary research interest is to probe the immediate environments of supermassive black holes through X-ray spectroscopic and temporal variability studies. His research work includes X-ray observations, data analysis/modeling and interpretation. He is also interested in multiwavelength observational astrophysics. **3. Prof. Girish V. (ISRO Bangalore)** Prod. Deputy Director at science program office, ISRO responsible for astronomy programs of ISRO and managing

	AstroSat, India's first mission dedicated for astronomy. Worked on a kind of variable stars called Rapidly Oscillating Ap Stars. Worked on X-ray studies of Cataclysmic variables. Joined ISRO in 2006 and initially worked on Roentgen-II satellite, a collaboration between India and Russia to study Sun. Later worked on Chandrayaan and AstroSat. Main research interests are understanding the accretion processes in white dwarf binaries called cataclysmic variables using high resolution X-ray spectra. **4. Prof. Dipankar Bhattacharyya (Ashoka University Delhi)** Dipankar Bhattacharya is the Sunanda and Santimay Basu Chair Professor in Astrophysics at Ashoka University. Prior to joining Ashoka he was the Dean, Core Academic Programmes at the Inter-University Centre for Astronomy and Astrophysics (IUCAA). His research interests cover both theoretical astrophysics and observational astronomy, with particular emphasis on High Energy Astrophysics including compact stars, black holes and cosmic explosions. He is closely associated with the Indian space astronomy mission AstroSat and is the chair of its Science Working Group. **5. Prof. Kanak Saha (IUCAA Pune)** Prof. Saha's research is focused on how galaxies are formed in the early universe and how they evolve to present-day ones. A major part of this activity lies in the high-redshift universe when galaxies were just forming and for this, He utilizes the UV telescope onboard AstroSat, the Hubble Space Telescope and several others. He also studies dynamics of galaxies using cluster computer simulation **6. Prof. Durgesh Tripathi (IUCAA Pune)** Durgesh Tripathi is a Professor (Scientist-G) at the Inter-University Centre for Astronomy and Astrophysics (IUCAA) and the Principal Investigator of the Solar Ultraviolet Imaging Telescope (SUIT) onboard the Aditya-L1 mission, the first space observatory of the Indian Space Research Organization (ISRO) dedicated to solar observations. He is an affiliate faculty at the Centre of Excellent in Space Science India (CESSI), at the Indian Institute of Science Education and Research (IISER-Kolkata). From 2014 till 2021, he was the head of the Max-Planck India Partner Group on the coupling and dynamics of the solar atmosphere
7. Number of Faculty attended/participated	05
8. Number of Student attended / participated	38 (Ph.D. students)
9. No. of external students	08 (Post Doc Students)

10. The objectives of the Program/activity/event	The objective of the workshop is to qualitatively analyze the Astrosat data. In the workshop, projects were assigned to the participants, involving imaging, photometric, spectral, and timing analysis of data from SXT, LAXPC, CZTI and UVIT instruments on board ASTROSAT. Public talk on " Observing Aditya (the Sun) with ISRO's Aditya -L1 mission.
11. Description of the Program/activity/event	Resource persons delivered lectures on the different aspects of Astrosat and analyzing data. The primary component was team-wise extended hands-on sessions where participants analyzed AstroSat data in consultation with experts. Following projects were assigned to 6 team: 1.Temporal – spectral study of Neutron Star X-ray Binary Source GX340+0 2.Energy dependent timing behaviour of MaxiJ1535-571 3.Spectral and timing study of accretion powered millisecond pulser MaxiJ0911-655 4.studying UV/Xray spectral variability in NGC4151 using ASTROSAT 5.Catalog of UV sources in G0005 field south using UVIT deep imaging 6.Temporal and Spectral study of Blazar IES0229+200 in low flux state
12. Benefit/Key outcomes of the Program/activity/event	• The focus of the workshop was on data analysis in which participants worked in groups on different sources data. The participants got acquainted to the analysis of LAXPC, SXT and UVIT data of different objects. • Public talk Prof. Tripathi Aditya L1 mission. • The talk created a lot of enthusiasm about the launch of Aditya L1 in September this year.
13. Enclosures with report	Brochure, Notice, Geo-tag photos, Attendance of students/faculty/external participants, Bio Data of resource person, Any other information.

Dr. Reshma Raut Dessai
Coordinator
Designation: Assistant Professor

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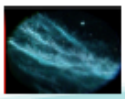
Seal of the School

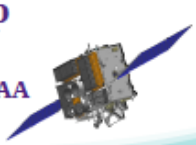
School of Physical and Applied Sciences
Goa University

Advanced Astrosat Data Analysis Workshop



9th to 15th January 2023

Organized by ISRO funded AstroSat Science Support Cell (ASSC), IUCAA and Goa University



About the workshop

AstroSat is India's first dedicated multi-wavelength space observatory, launched by the Indian Space Research Organization (ISRO) on 28th September 2015. AstroSat is specially designed to study high energy phenomenon, detect transient X-ray sources, measure neutron stars' magnetic fields, and conduct deep field U.V. surveys. General information about AstroSat is available at http://astrosat.iucaa.in/.

The ISRO sponsored AstroSat Science Support Cell (ASSC) at IUCAA and Goa University is organizing an "Advanced Astrosat Data Analysis Workshop" from 9th to 15th January 2023 at Goa University. In this workshop, projects will be assigned to the participants involving imaging, photometric, spectral, and timing analysis of data from SXT, LAXPC, and UVIT instruments on board AstroSat. The primary component would be team-wise extended hands-on sessions where participants analyze AstroSat data in consultation with experts. Applications are invited from Ph.D. students, Postdocs, and Faculty members interested in utilizing AstroSat data for their research.

About Goa University

Goa University (GU) are a multi-disciplinary, locally relevant, and internationally visible public University in India. The Centre for Postgraduate Instruction and Research (CPIR) of Bombay University was established in Panaji in 1962 with students drawn from a small host population (where 70% of the students are women). Goa University was established in 1984, incorporating CPIR.

GU currently has 10 Schools and 15 departments offering eighty-five post-graduate and doctoral degree programs in different disciplines.

GU is the only university in Asia to offer post-graduate and doctoral degree programs in the Portuguese language.

AstroSat Science Support Cell, IUCAA

After the launch of AstroSat, the AstroSat Science Support Cell (ASSC) was set up as a joint venture of the ISRO and the Inter-University Center for Astronomy and Astrophysics (IUCAA) with the primary purpose of encouraging the use of AstroSat, both for making observing proposals and for utilizing archival data. ASSC provides tools and documentation required for these activities and maintains updates. The ASSC organizes meetings, workshops, and webinars to train users in these activities, runs a help desk to address user queries, provides utility tools, and disseminates analysis software through a consolidated web portal.

Important Dates

- Participation Limit : 35 who will be provided travel funds, boarding and lodging
- Preference would be given to junior Ph.D students and those applicants who would require AstroSat data analysis for their research.
- Duration of workshop: 9th-15th January 2023
- Last date to submit application: 30th November 2022
- Selected applicants will be informed by : 5th December 2022
- Upcoming workshop details can be found at : http://astrosat-ssc.iucaa.in/workshops

Apply here : https://forms.gle/spogiNvRiqFkbeEt5

- Venue : School of Physical and Applied sciences, Goa University

Organizers

- IUCAA: ASSC at IUCAA Pune, Email id: astrosathelp@iucaa.in
- Goa University: Dr. Reshma Raut Dessai, Email id: reshma@unigoa.ac.in

REGISTRATION

Advanced Astrosat data Analysis Workshop 8 to 15 January 2023

School of Physical and Applied Sciences Goa University

Sr. No	Name	Affiliation	Sign
1	VAIBHAV SHARMA	IIT KANPUR	
2	Amit Kumar	ARIES	
3	Arvind Kumar Dattatrey	ARIES	
4	Soumya Gupta	BARC	
5	RAJ KUMAR	HBNI	
6	Ajay Sharma	SNBNCBS	
7	Prajakta Lotlikar	Gaupat Parsekar College of Education	
8	ANIRBAN DUTTA	RRI	
9	AJITH B.	RRI	
10	URVASHI	DU	
11	Sonika Piridi	NIT Rourkela	
12	Anju Panthi	BITS Pilani	
13	KAVITA KUMARI	IUCAA, Pune	
14	Prakash Tripathi	IUCAA, Pune	
15	Pushpak Pandey	IUCAA, Pune	
16	Srimanta Banerjee	IUCAA, Pune	

17	Suraj Dhiwar	IUCAA	SDhiwar
18	Yeasin Ali	Calcutta University	[illegible]
19	Subhasish Das	GGU, Bilaspur	S.D.
20	Prajjwal Majumder	WBSU	P. Majumder
21	Divya Rawat	IUCAA	Divya
22	Akash Garg	IUCAA	[illegible]
23	Arijit Mandal	SNBNCBS.	[illegible]
24	ZAHIR Ahmad Shah	Central University Kashmir	[illegible]
25	Suchismito Chattopadhyay	Calcutta university	[illegible]
26	Hritwik Bora	Tezpur University	[illegible]
27	Suraj Kumar Chaurasia	B.H.U, Varanasi	Suraj
28	Suvendu Chandra	IUCAA	[illegible]
29	HITESH TANENIA	JMI	[illegible]
30	Biki Ram	IIT, I	BikiRam
31	H Lalthanthuanga	Mizoram University	[illegible]
32	Akhila. K	Providence College, Calicut	[illegible]
33	Sipra Hota	IIA	[illegible]
34	Sidharth. N.M.	Christ University, Bangalore	[illegible]

35	Sajad Ahmad.	Kashmir University	Sajad
36	Javaid Ahmad Tantry	University of Kashmir	Tantry
37	RANJEEV MISRA	IUCAA	
38	Gulab Dewangan	IUCAA	
39	Dipankar Bhattacharya	Ashoka University/IUCAA	
40	Geethika Santhosh	NSS, College, Pandalam Kerala	
41	Sree Bhattacherjee	Tezpur University	
42	Piyali Ganguly	IUCAA	Piyali
43	Shrabani Kumar	IUCAA	Shraba
44	DR. V. GIRISH	ISRO	
45	Shreya R. Karkade	Goa University	
46	Pratik N. Bodnekar	Goa University	
	Dr. Zahid Ahmad Shah	Central University of Kashmir	

Photo 1: Group photo of Advanced Astrosat data Analysis Workshop

Photo 2: Inauguration of the workshop by lighting lamp

Photo 3: Lecture session

Photo 4: Participants working on their project

Brochure: Public talk on "Observing Aditya (the Sun) with ISRO's Aditya -L1 mission"