BETTERING ACCESS TO A&A DATA IN THE UNIVERSITIES: THE IUCAA MODEL

presented by
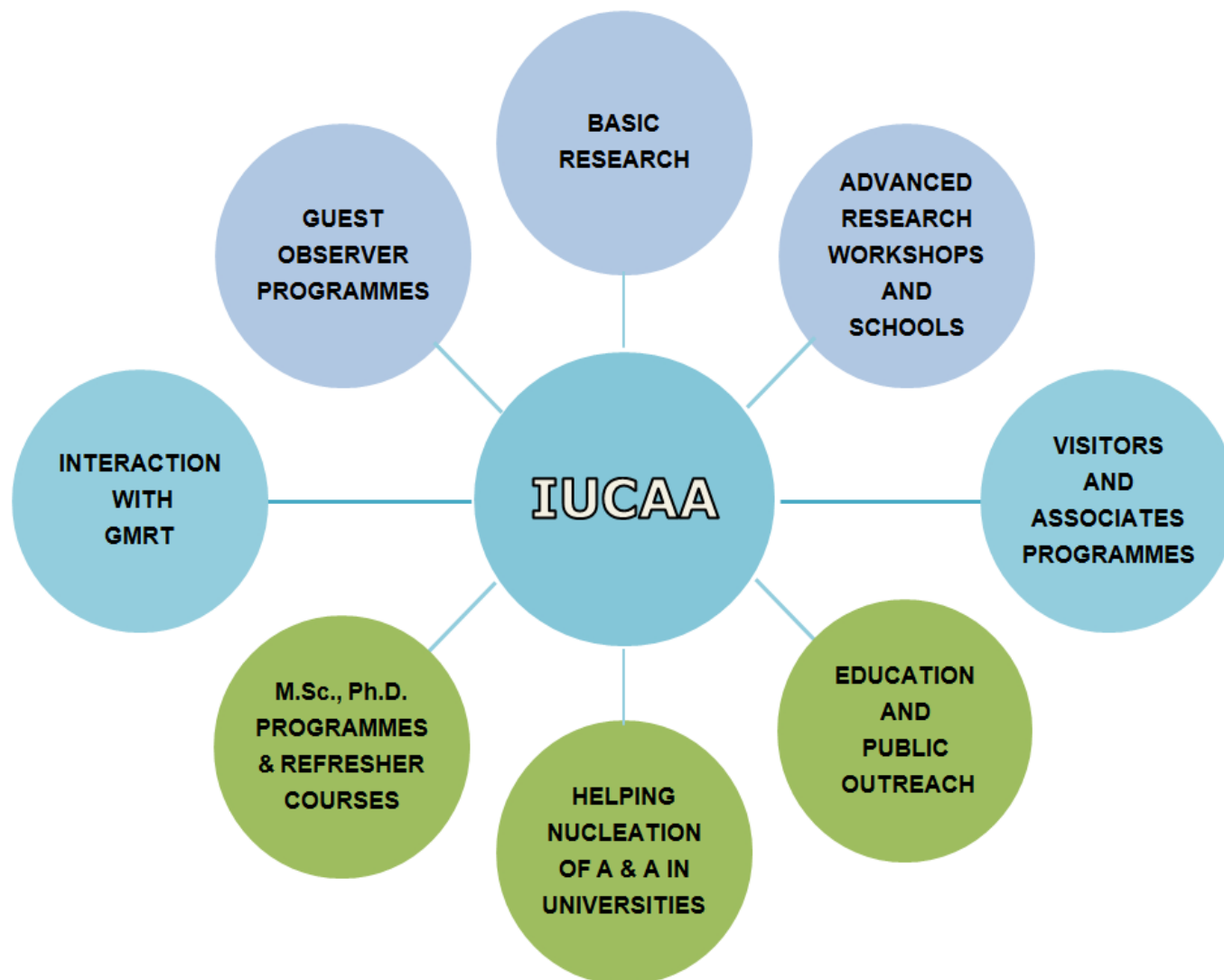
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IUCAA

Mandate: An Eight-fold path

INTER-UNIVERSITY ACTIVITIES

- Vibrant Visitors Programme
- Serves faculty and students with interests in astronomy, astrophysics and related areas
- Meant principally for faculty and students from Indian Universities and Colleges
- About 100 Visiting Associates
- Senior Visitors ~ 400/yr, Students ~150/yr
- There are many overseas visitors, at the expert as well as user level
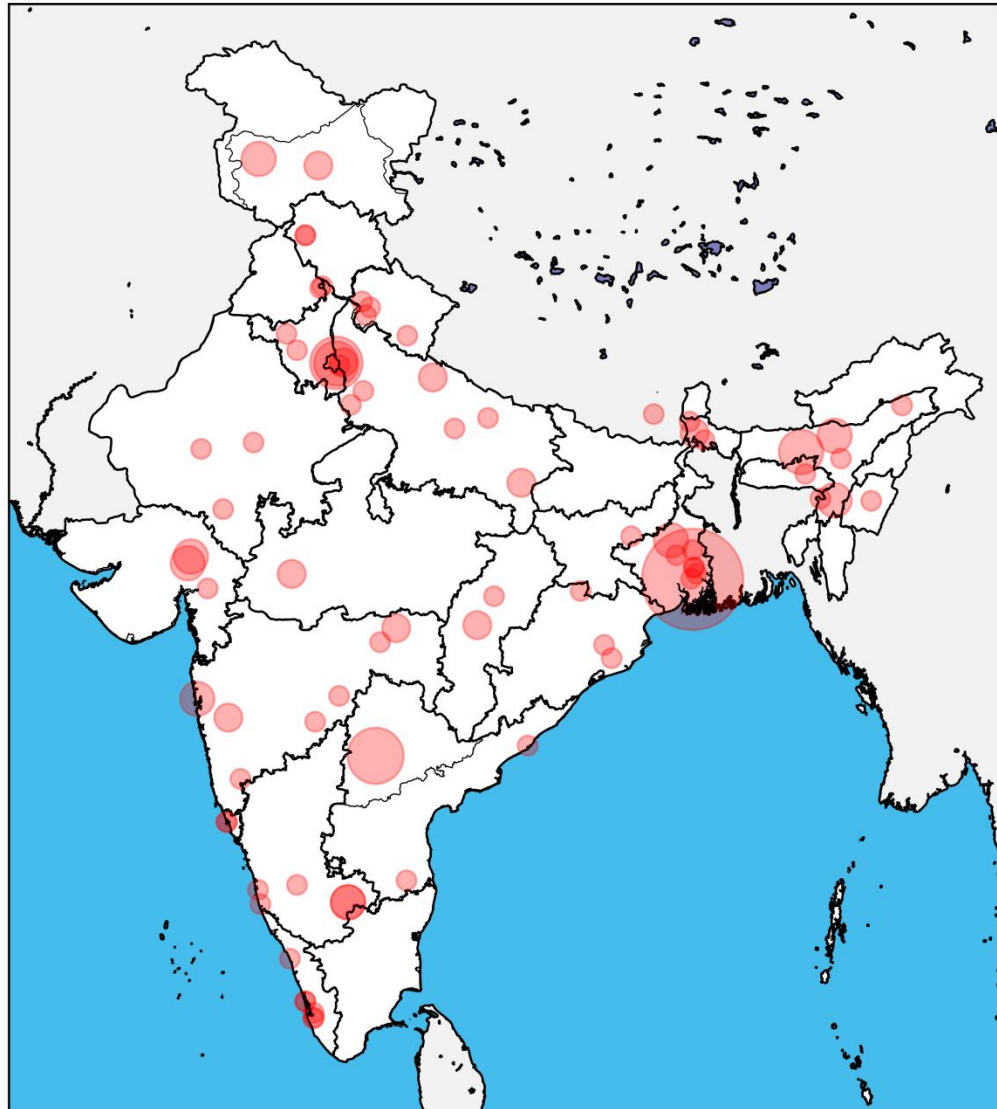
IUCAA

IUCAA Visiting Associates

- Number of Associates ~150 Faculty from Universities and Colleges, mostly with Ph.D.

- Work spans a wide range including theoretical, observational and instrument related research.

- Associates often work with IUCAA faculty or other associates, and involve their students in the work.

- Several Associates use telescopes in India and abroad for their observational programmes.

UNIVERSITY STUDENTS AND YOUNG FACULTY

- A number of University students work closely with IUCAA faculty as official or non-official co-guides. This is proving to be a very important scheme

- A number of young college teachers too work with IUCAA faculty on various frontier topics in astronomy

UN/ITALY Workshop on the Open Universe initiative, Vienna, Austria

VISITING ASSOCIATES FROM UNIVERSITIES AND COLLEGES

Current Number:
155

UN/ITALY Workshop on the Open Universe initiative, Vienna, Austria

WORKSHOPS/MEETINGS HELD BETWEEN JAN-JUNE 2017

Meetings/workshops organized at IUCAA:.

1. Topical Course in Computational Statistics and AstroStatistics, Jan. 2 – 10

2. Training School in Optical Astronomy with Large Telescopes, Jan. 16 – 27

3. Workshop on Data Intensive Science, Feb. 13 – 18

4. Workshop on Aspects of Gravity and Cosmology, Mar. 7 - 9.

5. Meeting on LIGO - India: The Road Ahead - III (LITRA - III), Mar. 27 - 28.

6. Executive Committee Meeting of the IAU, May 10 – 12.

7. Meeting on LIGO - India: The Road Ahead - IV (LITRA - IV), May 15 - 16.

8. UGC Refresher Course on Astronomy and Astrophysics, May 15 - June 14

Workshops/Meetings held between Jan-May 2017

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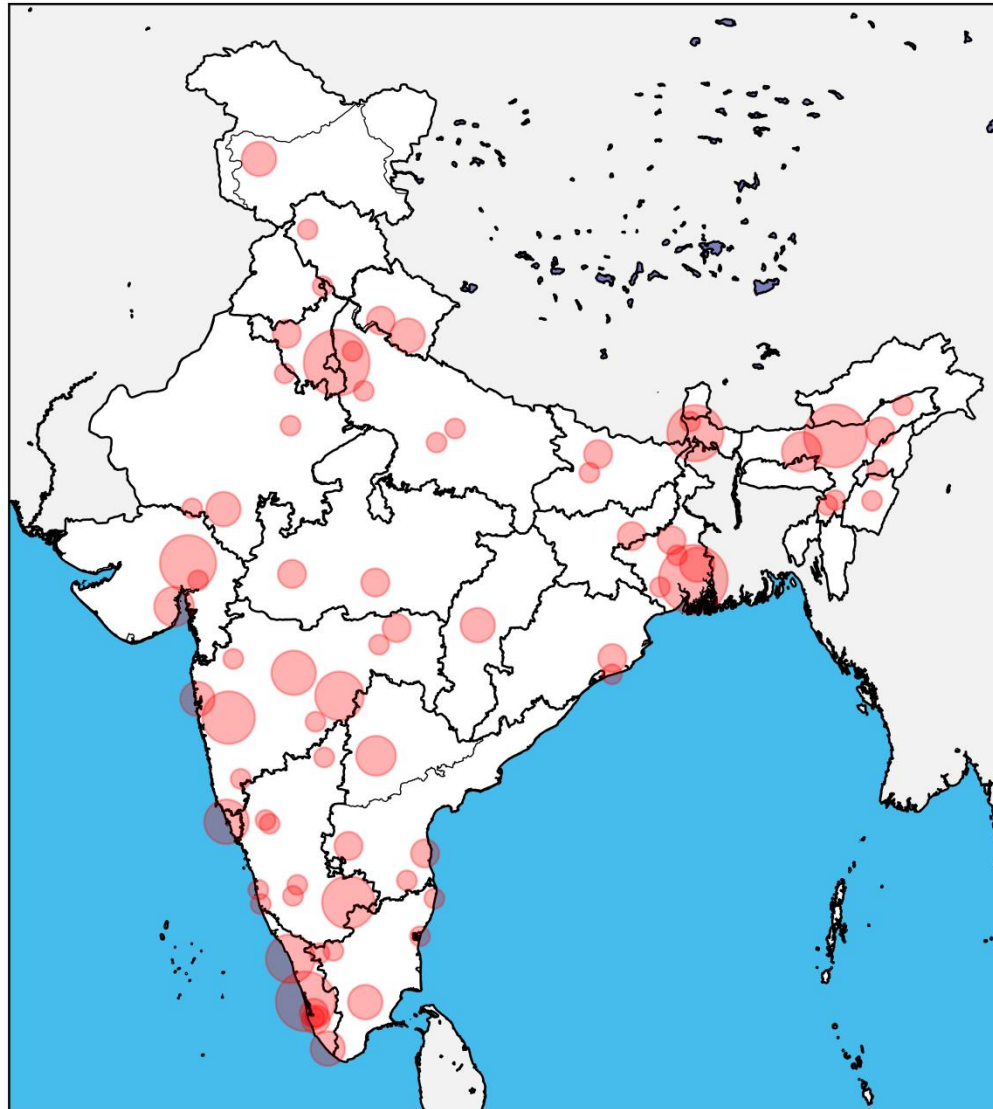
WORKSHOPS AND MEETINGS

UN/ITALY Workshop on the Open Universe initiative, Vienna, Austria

WORKSHOPS/MEETINGS

Meetings/workshops organized outside IUCAA:

UN/ITALY Workshop on the Open Universe initiative, Vienna, Austria

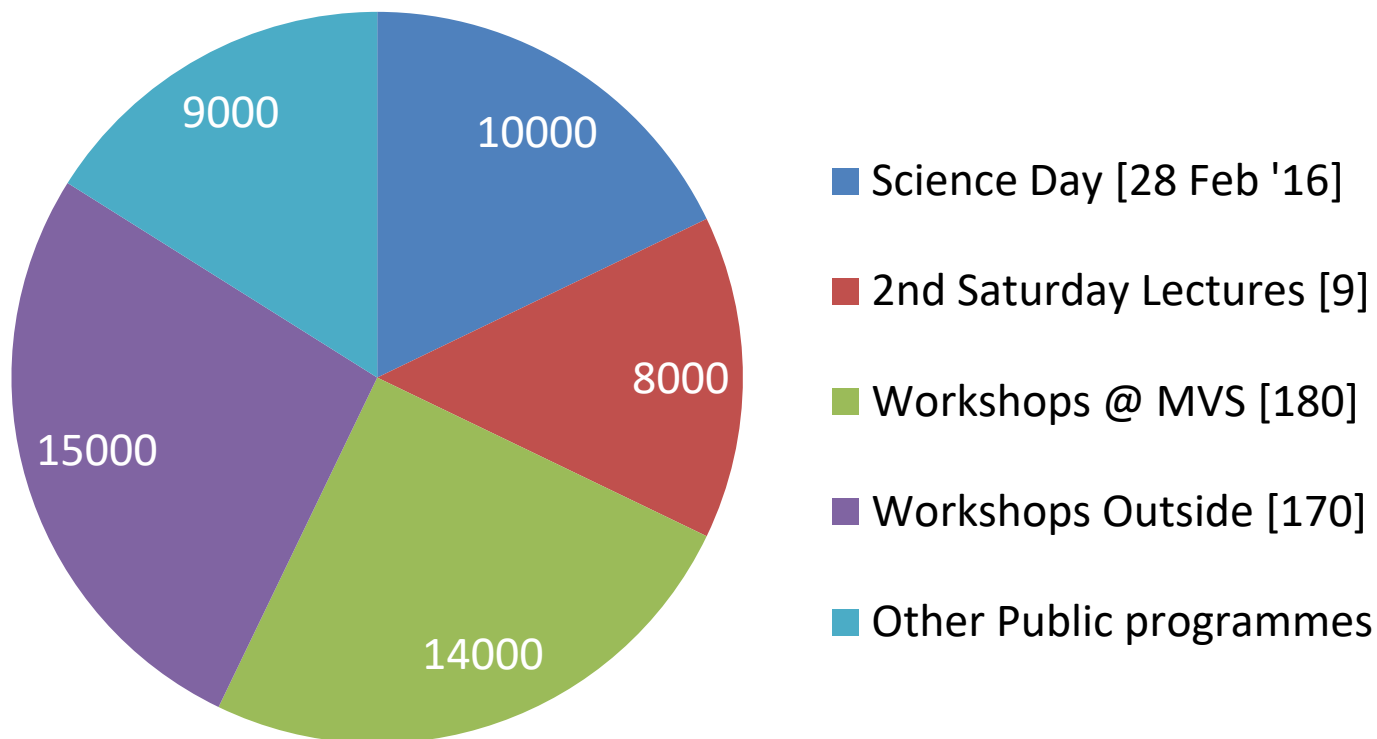# WORKSHOPS HELD IN THE LAST 10 YEARS FOR UNIVERSITY FACULTY AND STUDENTS OUTSIDE IUCAA

Total Number of workshops:
206

IUCAA RESOURCE CENTRES

◆ There are at present six IUCAA Resource Centres (IRC) located at Delhi, Kolkata, Raipur, Kochi, Siliguri and Udaipur.

◆ There are also three University Centres at Kozhikode, Nanded and Tezpur.

◆ There are four IUCAA Nodes for Astronomy & Astrophysics Development (INAAD) at four Colleges in Delhi, Gangtok, Pune and Kerala.

◆ We are in the process of re-organising these centres and activities with a new call of proposals

SCIENCE & ASTRONOMY OUTREACH DURING 2016-17

- 10000 — Science Day [28 Feb '16]
- 8000 — 2nd Saturday Lectures [9]
- 14000 — Workshops @ MVS [180]
- 15000 — Workshops Outside [170]
- 9000 — Other Public programmes

Major Partnerships:

ASI-POEC, ISRO-TOT, India-TMT, LIGO-India, *Vigyan Prasar*, IAU OAO & OAD

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Data and scientific community development

- Archival astronomical data provides a means to create and sustain a scientific community where indigenous observatories are not available.

- IUCAA is actively involved in getting the Universities to use the currently available tools and develop new ones to further this cause

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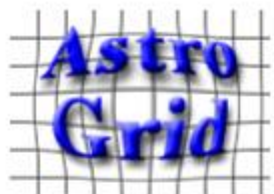
VIRTUAL OBSERVATORY - INDIA

- **IUCAA**
- **Persistent Systems Limited**
- **Ministry of Communications and Information Technology**
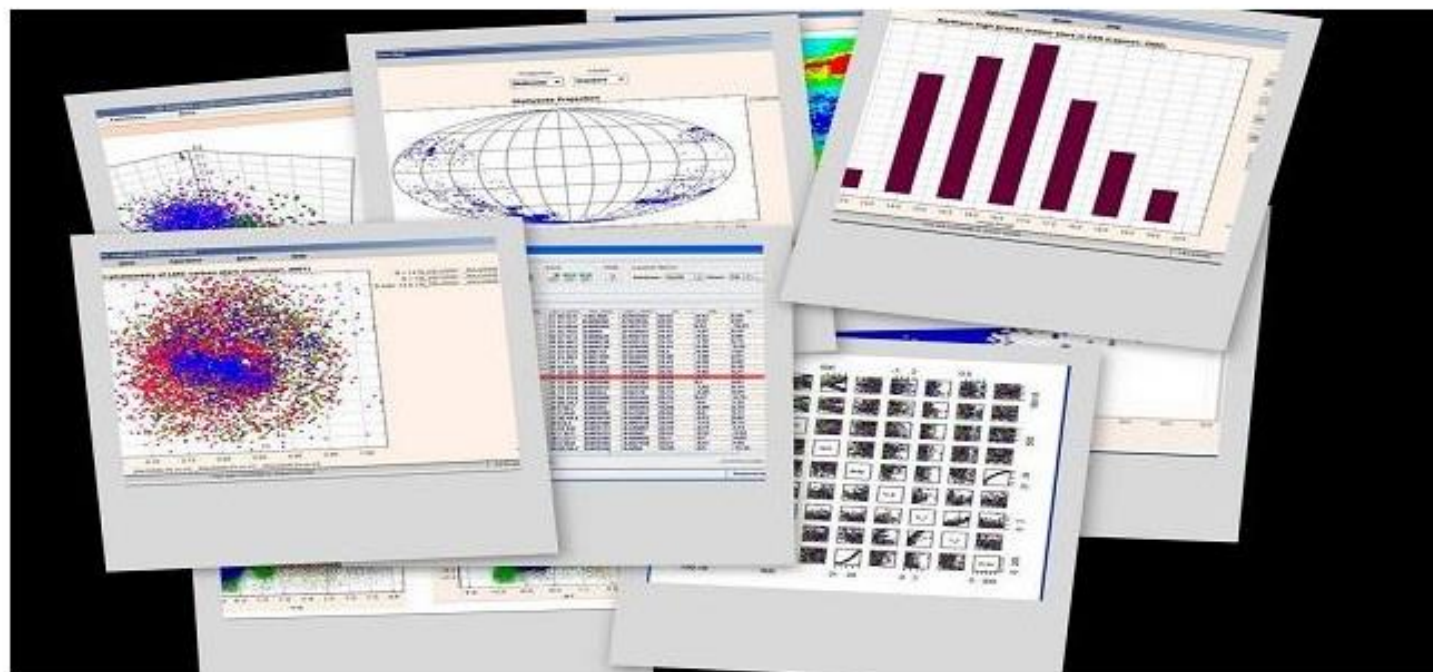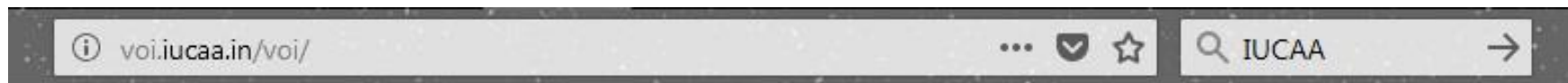
Virtual Observatory India

VOI Products

Mosaic Service

PyMorph Service

VOPlot

VOMegaPlot (Client-Server Version)

AstroStat

VOCat

VOPlatform

VOConvert (ConVOT)

CSharpFITS Package

Android Cosmological Calculator

Android Name Resolver

Stat-Lite - an Android Application

VOTable JAVA Streaming WriterC++ parser for VOTable

Fits Manager

HCT Data Archival System
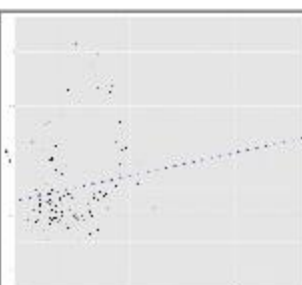
UN/ITALY Workshop on the Open Universe initiative, Vienna, Austria
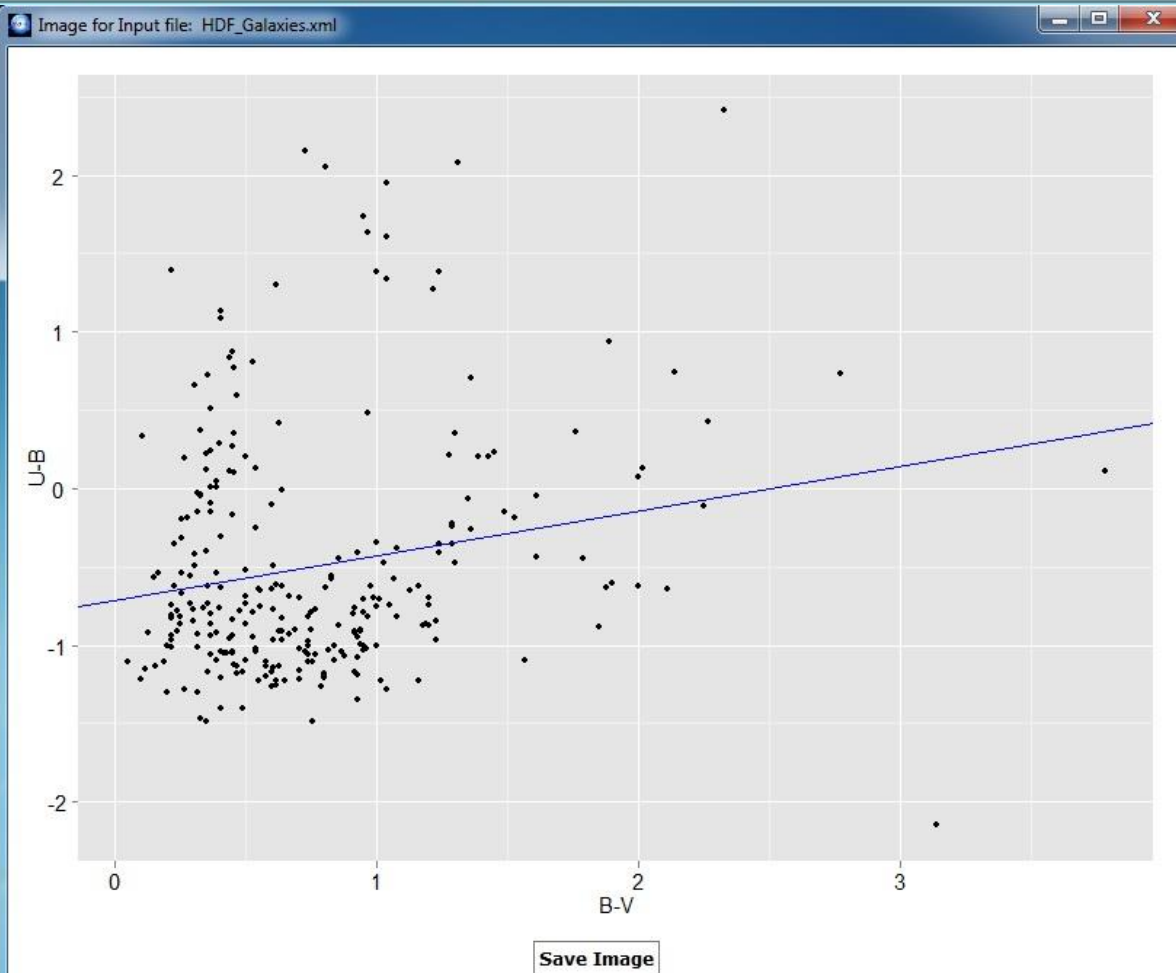
ASTROSTAT PAPER

AstroStat - A VO tool for statistical analysis (06/2015)

- BIB : [2015A&C....11..126K](#)

- Link : [http://voi.iucaa.in/voi/AstroStat.html](#)
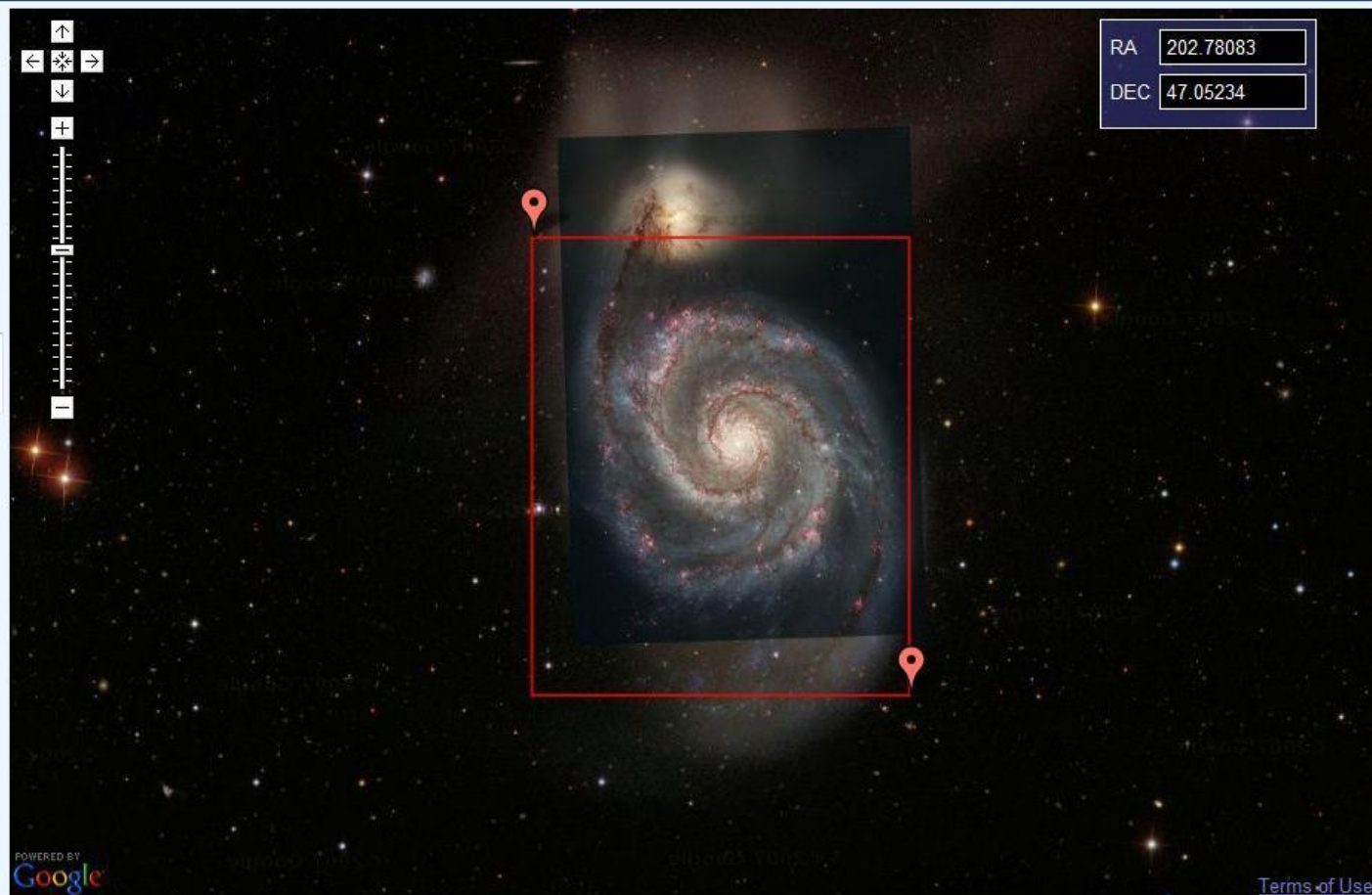
- **IUCAA also hosts a NASA Astrophysical Data System mirror.**

DATA AND SCIENTIFIC COMMUNITY DEVELOPMENT

Archival astronomical data provides a means to create and sustain a scientific community where indigenous observatories are not available.

IUCAA development efforts

- IUCAA is actively involved in getting the Universities to use the currently available tools and in developing new ones to further this cause.

Example: a community working on top end astronomical X-ray data was developed in India where they published frontline research papers using archival data from international satellites such as RXTE, Chandra, XMM-Newton etc.

India's first Multiwavelength Space Observatory
ASTROSAT
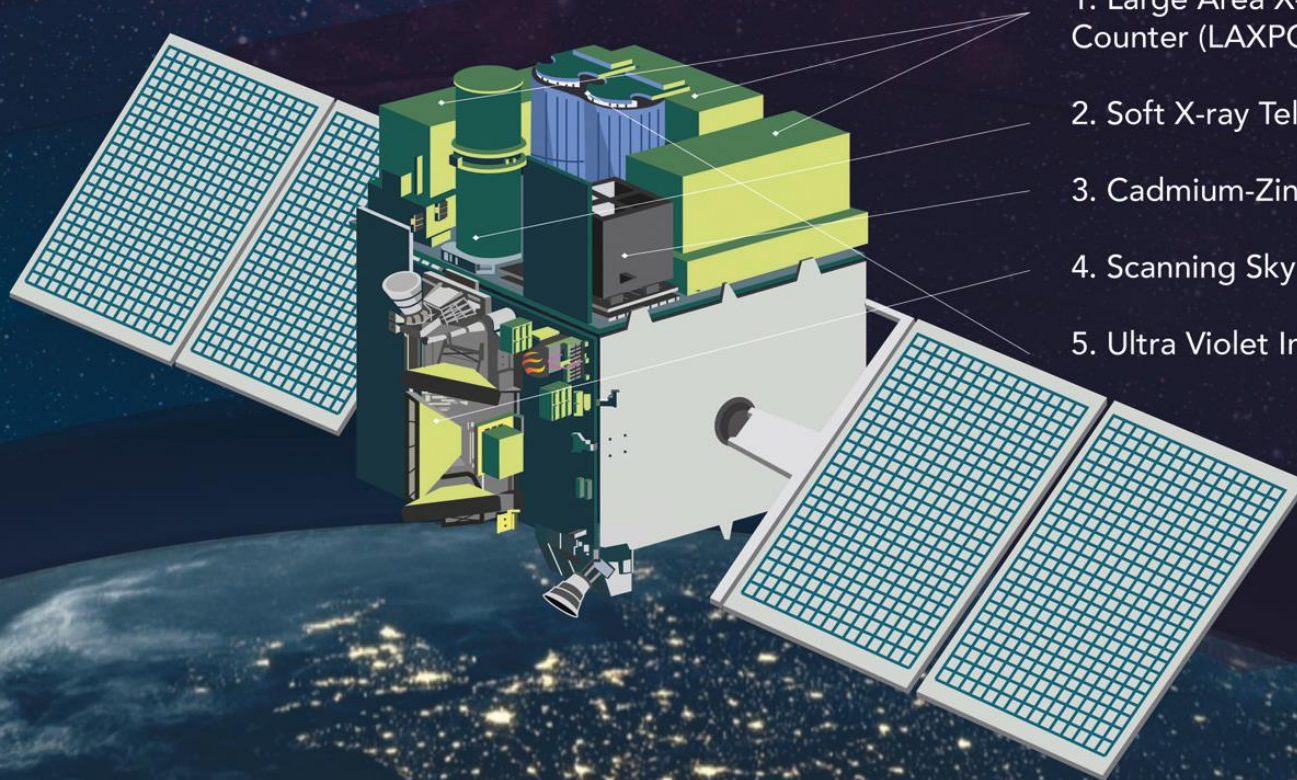
The 5 telescopes of the Astrosat

1. Large Area X-ray Proportional Counter (LAXPC)

2. Soft X-ray Telecope (SXT)

3. Cadmium-Zinc-Telluride Imager (CZTI)

4. Scanning Sky Monitor (SSM)

5. Ultra Violet Imaging Telescope (UVIT)

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AstroSat Science Support Cell (ASSC)

- Set up in May 2016 via MOU with ISRO to support User community from Universities and Institutes

  - Proposal Preparation

  - Data Analysis

  - Maintain software/ CALDB

  - Develop advance analysis tools

  - Training workshops (5 per year)

AstroSat SCIENCE SUPPORT CELL — An ISRO-IUCAA joint initiative

Home | Proposal Preparation | Data and Analysis | Documents | Workshops | Timelines | FAQ

Recent updates

11/07/2016:
CZTI response and background update; PIMMS updated
G06 submission deadline extended to 17 July 4pm IST

08/07/2016:
Background files updated for SXT and CZTI

24/06/2016:
AO Cycle opened. Submission Deadline 29 July 2016 4pm IST

17/06/2016:
GT Cycle G06 opened. Submission Deadline 11 July 2016 4pm IST

16/06/2016:
AstroSat AO-1 workshop announced. Application deadline 26 June 2016

10/06/2016:
AstroSat Proposers' Guide released

Proposal Preparation

Online tools

AstroSat Proposal Processing System
  Scientific justification LaTeX template
  Technical justification LaTeX template

AstroSat source visibility calculator Astroviewer

UVIT exposure time calculator at IIA

UVIT exposure time calculator at Calgary

UVIT bright source warning tool

AstroSat WebPIMMS

Documents

AstroSat proposers' guide
Mandatory checks to be done for UVIT observations
Red Book: GT proposals allocated time during Apr-Sep 2016

Downloadable Resources

Source visibility estimator

- Astroviewer -- a linux command line version (64 bit)
- Astroviewer for linux 32-bit
- Orbital elements for use with Astroviewer

ASSC website set up at IUCAA with proposal preparation tools & documents, data analysis, etc.

Data and scientific community development

- The community was developed by having a large number (more than 6 per year) of workshops all across the country. A critical component is hands-on sessions, which familiarize students on the handling and interpretation of large data.

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- After the launch of AstroSat, this community is now able to use their own satellite data. This was again achieved by having a large number of workshops with hands-on sessions.

More: http://astrosat-ssc.iucaa.in/?q=workshops

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INDIAN ASTRONOMY – LOOKING AHEAD

- **International Megaprojects**
- **Indigenous large / space telescopes**
- **Capacity to host and handle data**

ADVANCED LIGO - INDIA

LIGO INDIA

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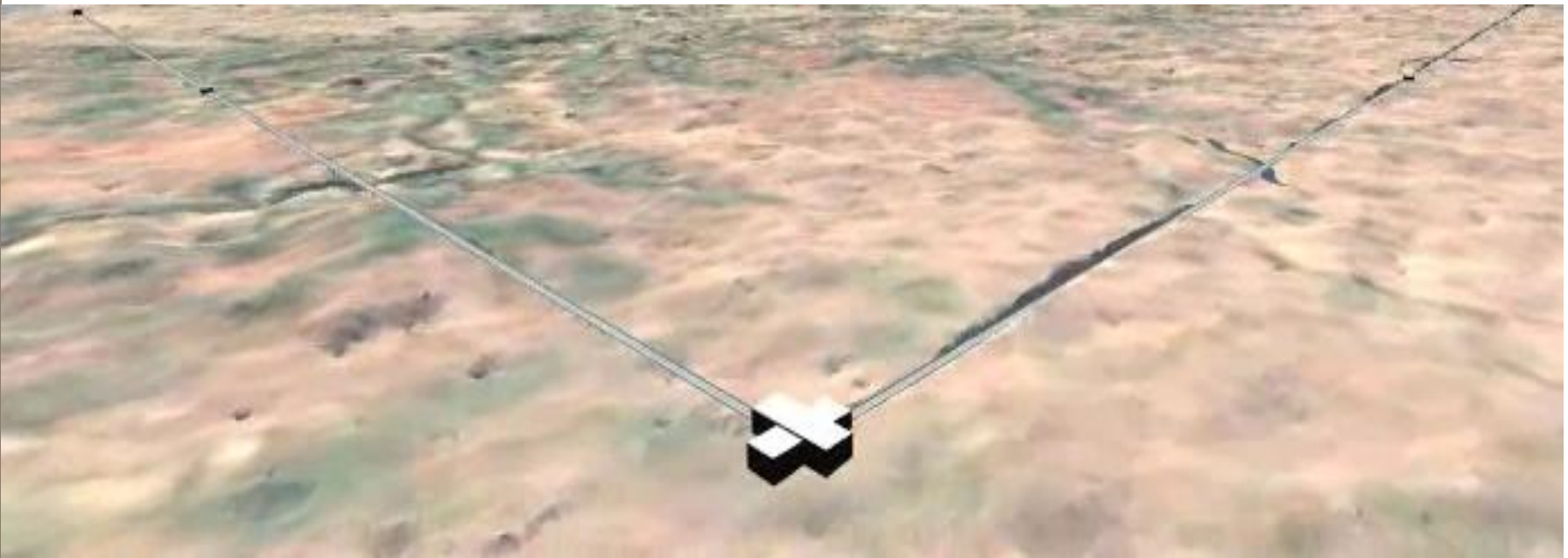
सारथी (SAARATHI)
GW DATA CENTRE @ IUCAA

सारथी (SAARATHI)
GW DATA CENTRE @ IUCAA

- **Current IUCAA data centre:** (oper. Jan 2013) 30Tf , 600 Tb [10Tf for GW]

- **GWDA centre:** ~100Tf, 2400 cores (LSC Tier2 level) [Jan 2016]
  Open to LSC at 50%. Used in second science run of Advanced LIGO

- **Future Tier-1 LIGO data centre post LIGO-India operations**

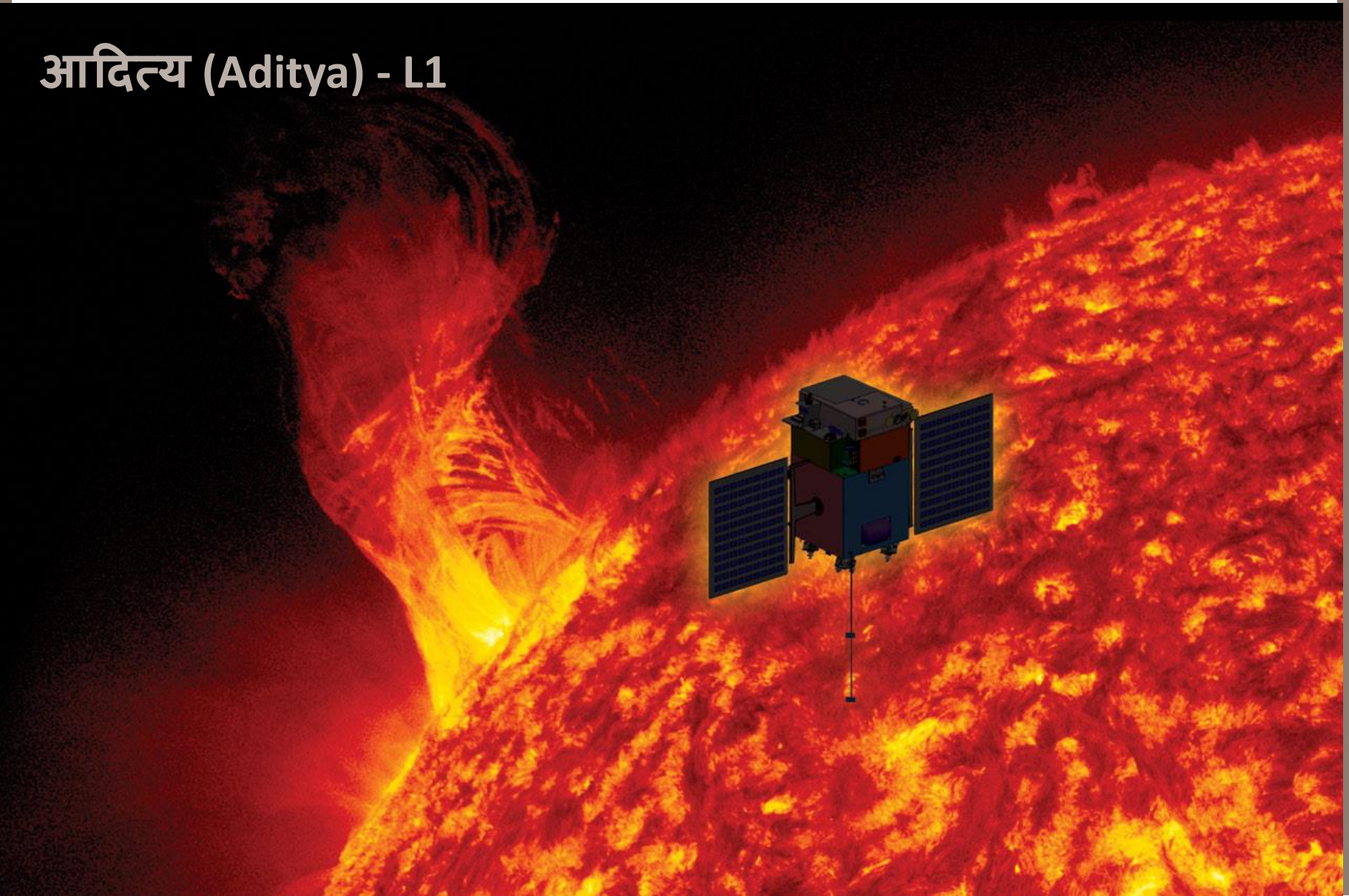- **All infrastructure for future expansion to ~500 Tf in place**
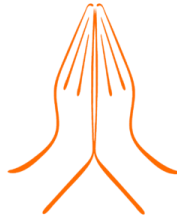
THIRTY METRE TELESCOPE

- ❑ Canada
- ❑ China
- ❑ India
- ❑ Japan
- ❑ Caltech
- ❑ University of California

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आदित्य (Aditya) - L1

Thank You!

Questions?

(samir@iucaa.in)

IUCAA INPUTS

- **Prof. Somak Raychaudhuri (Director)**
- **Prof. Ajit Kembhavi (ex-Director)**
- **Prof. Ranjeev Misra**
- **Prof. Dipankar Bhattacharya**
- **Dr. Kaustubh Waghmare**

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UNITED TO UNCOVER THE UNIVERSE

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