

Subramania Athiray Panchapakesan**Curriculum Vitae**

CONTACT INFORMATION	Assistant Professor Department of Space Science Center for Space Plasma and Aeronomic Research University of Alabama Huntsville, AL.	Phone: +1-672-814-5739 E-mail: athray@gmail.com athiray.panchap@uah.edu athiray.panchap@nasa.gov
EDUCATION	Ph.D in Physics - University of Calicut June 2015 Indian Space Research Organization (ISRO) Satellite Centre, Bangalore Indian Institute of Astrophysics (IIA) , Bangalore Thesis Title : Study of lunar surface chemistry using Swept Charge Devices Thesis Advisers : Dr. P. Sreekumar ; Prof. B. R. S. Babu	
PROFESSIONAL APPOINTMENTS	Assistant Professor (The University of Alabama) Research Scientist (The University of Alabama) NASA Postdoctoral Program (USRA) Postdoctoral Associate (University of Minnesota) Postdoctoral Fellow (Manipal University) Research Fellow (ISRO/IIA) Research Intern (IIA)	Aug.2023 - Present Dec.2021 - July 2023 Mar.2019 - Nov.2021 Nov.2016 - Feb.2019 Aug.2015 - Oct.2016 Jun.2009 - Jun.2015 Jun.2007 - Dec.2009
KEY MISSIONS AND RESEARCH EXPERIENCE	Marshall Grazing Incidence X-ray Spectrometer (MaGIXS-2) NASA Solar Sounding rocket mission Launch : 2024 <ul style="list-style-type: none">• Role : Deputy Instrument Scientist• PI : Dr. Amy Winebarger, NASA MSFC Marshall Grazing Incidence X-ray Spectrometer (MaGIXS-1) NASA Solar Sounding rocket mission Launch : 2021 <ul style="list-style-type: none">• X-ray calibration lead : responsible for end-to-end calibration, data analysis, generation of calibration products Focusing Optics X-ray Solar Imager (FOXSI-3) NASA Solar Sounding rocket mission Launch : 2018 <ul style="list-style-type: none">• Detector team lead : Calibration of <i>FOXSI</i> hard X-ray detectors using sealed radioactive sources and synchrotron facility; <i>FOXSI</i> microflare data analysis Chandrayaan-2 Large Area Soft x-ray Spectrometer(CLASS) Indian Moon mission Chandrayaan-2 Launch : 2019 <ul style="list-style-type: none">• Characterization and ground calibration of X-ray detectors; Collimator design, data rate and operations ASTROSAT - Scanning Sky Monitor (SSM) Indian multi-wavelength Astronomy mission Launch : 2015 <ul style="list-style-type: none">• X-ray transmission studies of filters - using synchrotron beam Chandrayaan-1 X-ray Spectrometer (C1XS) Indian Moon mission Chandrayaan-1 Launch : 2008	

- Development of X-ray Fluorescence (XRF) inversion algorithm *x2abundance* and Validation using laboratory XRF experiments; C1XS data analysis

CURRENT
MISSIONS &
ROLES

CubeSat Imaging X-ray Solar Spectrometer (CubIXSS)

NASA Cube Satellite Mission

Exp. Launch : 2025-26

- Role : Project Scientist
- PI : Dr. Amir Caspi, South West Research Institute

UPCOMING
MISSIONS &
ROLES

The EUV CME and Coronal Connectivity Observatory (ECCCO)

NASA Small Explorer Mission

- Role : Co-Investigator
- Status : Phase A
- PI : Dr. Katharine Reeves, Smithsonian Astrophysical Observatory

The Marshall Grazing Incidence X-ray Spectrometer (MaGIXS-3)

NASA Solar Sounding rocket mission

Exp. Launch : 2025-26

- Role : Principal Investigator
- Status : Submitted to NASA H-LCAS

RESEARCH
GRANTS

Scheme for Promotion of Academic and Research Collaboration (SPARC), Government of India Program, “Studies of charged and neutral radiation in space, its variations and potential impact on human presence in space”, Athiray P. S. (Co-PI), USD 131,000, 2024 - 2026. Student training and international travel support.

New Tenure-Track Faculty award from the Office of the Vice President for Research and Economic Development, UAH, “Supervised machine learning to unfold Chandra overlappogram data – An application from solar physics”, Athiray P. S. (PI), USD 9,995, 2024 – 2025.

NASA Heliophysics Low-Cost Access to Space - F/NASA/MSFC/3.3.5/Marshall Grazing Incidence X-ray Spectrometer, Athiray P.S., (Co-I), USD 264,177, 2022 – 2025.

NASA Heliophysics Flight Opportunities Research - O/SWRI/The CubeSat Imaging X-ray Solar Spectrometer, Athiray P. S., (Co-I), USD 105,102, 2022-2026.

NASA Heliophysics Guest Investigator (H-GI) Program, “Advancing our understanding of plasma heating in solar active regions using wide-field imaging spectroscopy”, Athiray P. S. (PI), USD 410,500, 2024-2027.

RESEARCH
INTERESTS
EXPERTISE

Scientific Expertise: Solar flare heating, High-temperature solar coronal diagnostics, Lunar surface chemistry, X-ray fluorescence (XRF) spectroscopic analysis

Instrumentation: X-ray instrument testing and calibration, X-ray imaging and spectroscopy, Calculation and verification of radiometric calibration of detectors and instruments, CCD, CMOS, Strip detectors (Si/CdTe)

Data analysis and modeling techniques: XRF inversion for elemental abundances, Charge transport model for X-ray CCDs, Methods for photon counting in X-ray images, Inversion of spatial-spectral information from Imaging Spectrographs

AWARDS & FELLOWSHIPS	• NASA STO Life Saver Award - MaGIXS calibration	2024
	• NASA Group achievement honor award – MaGIXS team	2022
	• National Merit Scholarship, University Grants Commission	2003 - 2005
	• DST Research Fellowship	2008 - 2009
	• ISRO - IIA Research Fellowship	2009 - 2015
	• LPI Career Development Award : Lunar & Planetary Institute, NASA, USRA	2014
	• K. D. Abhyankar Best Thesis Presentation Award : Astronomical Society of India	2016
	• NASA Postdoctoral Program : USRA	2019 - 2021
STUDENT MENTORSHIP	• ASCTE-CSPAR-NASA internship program (5 high school students): Aug 2024 - Present	
	• A.J.Shipp (Student specialist) for MaGIXS analysis : Aug 2024 - Present	
	• Lucien Mallett (Undergrad Senior Thesis, Harvey Mudd College, CA) : Jun 2023 - May 2024	
	• Arthur Hochedez (Master Internship, Mines Paris, France) : Mar - Sep 2023	
	• Lela Creamer (NASA Internship, William & Mary, VA) : Jun 2023 - Aug 2023	
	• Have been an active mentor to train undergraduate students for solar physics research under the <i>Research Experiences for Undergraduates program at UAH</i> (since 2019)	
COMMUNITY SERVICE	• Have been a co-convener/chair for a solar physics session in the AGU Fall meeting (since 2000)	
	• Have been serving in the NASA panel (ROSES) as a referee to review research proposals (since 2019)	
	• Have been a referee for the journals <i>The Astrophysical Journal</i> , <i>Frontiers in Space and Astronomy (solar physics and instrumentation section)</i> , <i>Applied Optics</i> , <i>Journal of Astrophysics and Astronomy</i> , <i>National Academy Science Letters</i>	
	• Have been a volunteer judge to evaluate student presentations and grade them for the Outstanding Students' Poster Award (OSPA) in the American Geophysical Union Fall meeting	
	• Have been a volunteer judge for “The Innovative System Project for the Increased Recruitment of Emerging STEM Students” (InSPIRESS), which is a STEM outreach program based at The University of Alabama in Huntsville, introducing high school students to create space-based mission.	
	• Volunteered as a judge to evaluate projects of middle/high school students and interact with them for the “North Alabama Regional Science and Engineering Fair” (NARSEF).	

EXPERIMENTAL
EXPERIENCE

Experiments using advanced facilities

- XRF on lunar analogs : *Conducted XRF experiments on lunar analog samples using synchrotron X-ray beam at Indus II facility, RRCAT, Indore, India*
- X-ray detector characterization : *Performed first FOXSI X-ray detector (Si/CdTe strip sensors) characterization using the Advanced Light Source, Berkeley*
- X-ray Optics testing : *Performed calibration of grazing incidence X-ray mirrors using the SLTF and X-ray and Cryogenics Facility (XRCF) at NASA MSFC*

TEACHING
EXPERIENCE

- Graduate course : **Introduction to remote sensing space instrumentation for solar physics - SPA620** 2024
Dept. Space Science, University of Alabama in Huntsville
- Graduate course : **Solar Physics (Observations) - SPA628:01** 2024
Dept. Space Science, University of Alabama in Huntsville
- Graduate course : **Research Methodologies** 2015
Manipal Centre for Natural Sciences, Manipal University
- Graduate course : **Astronomical Instrumentation (X-rays)** 2011-2013
Share responsibility for lectures, laboratory, exam, assignments and grades
Indian Institute of Science, (Joint Astronomy Program)

HARDWARE &
SOFTWARE
SKILLS

Simulation Tools : GEANT4, Zemax
Computer Programming : IDL, C, Python
Data Analysis Packages : XSPEC, OSPEX (Solar soft - SSWIDL), Gnuplot, R
Operating systems : GNU/Linux, Windows, MacOS