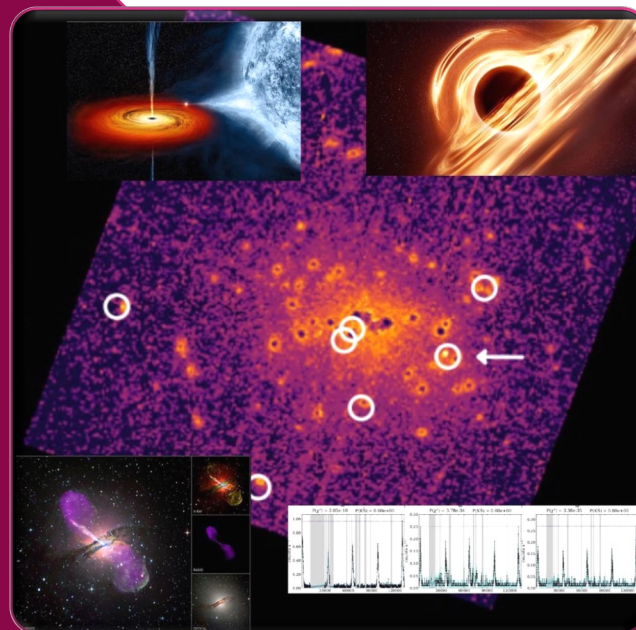# Maitrayee Gupta

Organization: Institut de Recherche en Astrophysique et Planétologie (CNRS/IRAP))

Position: Post-doc

I am Dr. Maitrayee Gupta; my Ph.D. and passion are in astrophysics and understanding the world in which we live.

My expertise includes variability detection and analysis, model fitting, and algorithm design. While I am fascinated by celestial objects of all kinds, my main focus has always been AGN, which I have worked on at the Harvard-Smithsonian and Nicolaus Copernicus Centers for Astrophysics. I presently work on the XMM2Athena project at the Institute for Research in Astrophysics and Planetology (IRAP), CNRS in Toulouse.

I primarily work on the project's variability package, designing EXODUS (EPIC XMM Outburst Detector Ultimate System), an algorithm that searches for variability in the whole EPIC field of view and is agnostic of source detection and number of counts. It accomplishes this by binning the observations into short time windows and comparing pixel counts per window to the median pixel counts to detect variable sources within the observation, making EXODUS computationally inexpensive. Using EXODUS we identified a diverse range of variable sources, including new sources, high and low-mass X-ray binaries, ULXs, and others. Running EXODUS to search for short term variability is an effective way to detect low-accretion rate AGN. The EXODUS algorithm can be seamlessly extended to work on images produced by the ESA's Athena X-ray observatory WFI (Wide Field Imager) instrument.