



5 POSTDOCTORAL POSITIONS AVAILABLE AT THE UNIVERSITY OF CAPE TOWN DEPARTMENT OF ASTRONOMY

Applications are invited for 5 Postdoctoral Positions in Extragalactic Radio and Multiwavelength Astronomy, Fast Transients and Gravitational Wave Sources in the Department of Astronomy at the University of Cape Town, South Africa. The appointments are for two years with an additional year contingent on satisfactory performance.

The following positions are available:

(**NOTE:** 4 positions are re-advertised from a previous call that we are now extending and 1 position is new as indicated below)

Position 1: MIGHTEE Radio Continuum (re-advertised)

The MeerKAT telescope is the precursor of the Square Kilometre Array mid-frequency dish array to be deployed later this decade on the African continent. MIGHTEE is one of the MeerKAT large survey projects, designed to pathfind SKA key science in cosmology and galaxy evolution. Through deep full-Stokes radio continuum imaging over several fields totaling 20 square degrees to microJy sensitivities and an ultra-deep image of a single 1 sq. deg. MIGHTEE explores dark matter and large scale structure, the evolution of galaxies, including AGN activity and star formation as a function of cosmic time and environment, the emergence and evolution of magnetic fields in galaxies. A joint program with the upgraded Giant Metrewave Radio Telescope (GMRT) in India, extends sensitive imaging of the MIGHTEE fields to below 1 GHz.

We are seeking a postdoctoral fellow to join the Inter-University Institute for Data Intensive Astronomy (IDIA) as part of a vibrant research team in extragalactic continuum and polarisation science at the University of Cape Town. The fellow will work on full-Stokes processing of MeerKAT MIGHTEE and related observations and participate in and lead MIGHTEE and Open time science projects. Applicants should have experience with observations and data processing with interferometric radio antenna arrays for full-Stokes continuum science, and expertise in analysis of multiwavelength data. The fellow will have access to MeerKAT MIGHTEE and ancillary data and associated GMRT data, and to the ilifu data intensive research cloud computing facility (<https://www.ilifu.ac.za>) for processing and analytics. For further information about the position please contact Russ Taylor (russ@idia.ac.za), Lucia Marchetti (lucia.marchetti@uct.ac.za) or Jacinta Delhaize (jacinta@ast.uct.ac.za).

Position 2: HI galaxy science with LADUMA (re-advertised)

The Looking at the Distant Universe with the MeerKAT Array (LADUMA) survey is one of the Large Survey Projects currently observing on the MeerKAT radio telescope in South Africa. The survey aims to observe neutral hydrogen in galaxies out to $z \sim 1.4$, within a single deep pointing encompassing the Extended Chandra Deep Field South, with the goal of mapping the evolution of HI in galaxies over two-thirds the age of the universe.

The UCT LADUMA group is seeking a postdoctoral fellow who has experience in the calibration and imaging of interferometric radio data who can contribute effectively to the efforts of the survey's data processing team. The appointed postdoc will also have access to the full LADUMA dataset (radio + multiwavelength ancillary data) with which to pursue their research projects, along with access to the ilifu data intensive cloud computing facility. For further information on the position, please contact Sarah Blyth (sarblyth@ast.uct.ac.za).

Position 3: Multi-Wavelength Galaxy and AGN Evolution with Radio Surveys (NEW!)

We seek a postdoctoral fellow to join the HELP-IDIA Panchromatic ProJect (HIPPO) group and the Inter-University Institute for Data Intensive Astronomy (IDIA) at the University of Cape Town (UCT). HIPPO aims to develop a cloud-based environment where processed radio data (i.e. radio maps and spectral cubes) can be effectively combined with multi-wavelength data to enable Galaxy and AGN Evolution studies using several complementary approaches. The fellow will be expected to lead an independent research programme exploiting one or more of state-of-the-art radio continuum and/or spectral line surveys we are involved with, i.e.: MIGHTEE-Continuum, MIGHTEE-HI, LADUMA, EMU as well as MeerKAT Open Time Projects such as the ADFS-MeerKAT Multi-Epoch Radio Transient Survey and the MeerLIRGS project. The fellow will also have the opportunity to be involved with the Legacy Survey of Space and Time (LSST) science collaboration and with the 4-metre Multi-Object Spectroscopic Telescope (4MOST) survey programme, and in particular their synergies with radio surveys. The fellow will have access to the ilifu cloud computing facility (<https://www.ilifu.ac.za>) and to the IDIA Visualization Lab (<https://vislab.idia.ac.za>) and will be expected to be involved in the development of software tools to support their research programmes. Experience in the scientific exploitation of deep and wide multi-wavelength extragalactic surveys and fluency in python programming are required. Experience with radio continuum and/or spectral line data and in the development of machine learning algorithms would be desirable. For further information about the position please contact Mattia Vaccari (mattia.vaccari@uct.ac.za) and Lucia Marchetti (lucia.marchetti@uct.ac.za).

Positions 4 & 5: Fast Transients and Gravitational Wave Sources (re-advertised)

The MeerLICHT telescope is an optical wide-field telescope that is synced with the MeerKAT radio array, in particular tied to the ThunderKAT and TRAPUM Transient Large Survey projects on MeerKAT. In a stand-alone mode MeerLICHT will also follow-up on gravitational wave alerts during LVK O4 and O5. The aim of the research group is to study populations of stellar transients for the understanding of binary stellar evolution, simultaneously in the optical and radio regimes. These transients can include stellar flaring sources, fast radio bursts, (super)novae, x-ray binaries and gravitational wave sources.

The MeerLICHT/ThunderKAT/TRAPUM collaboration is seeking 2 postdoctoral fellows who have a keen interest in this research area and have experience in optical and/or radio transient research. Usage will be made of the Ilifu intensive cloud computing facility, the

MeerLICHT/MeerKAT/SAAO/SALT telescopes in South Africa and facilities around the world. For further information on these positions please contact Paul Groot (paul.groot@uct.ac.za).

Profile: Applicants should have graduated with a PhD in Astronomy (or closely related field) within the past 5 years and have experience in: observational radio astronomy (Positions 1 & 2); observational multi-wavelength astronomy (Position 3); observational optical astronomy (Positions 4 & 5). Additional required or desirable skills are noted under each position above. Applicants should email (as a single PDF) a CV, a publication list, a brief overview of their research interests (2 pages), their envisaged research programme (1 page), and the contact details of 3 referees who are willing to send letters of recommendation if requested. Applicants should include “**UCT ASTRONOMY POSTDOCTORAL POSITIONS**” in the subject of the e-mail and the (prioritized) title(s) of the position(s) they are applying for in the body of the e-mail.

Application Deadline: 2 June 2023

Application Submission: Please send an email to Mrs Roslyn Daniels, Department of Astronomy, University of Cape Town, roslyn.daniels@uct.ac.za including a single PDF attachment.

Inquiries about job: See the contact people for each position above.