

## EIGHT FUNDED\* RESEARCH POSITIONS - 2019

<http://www.saa0.ac.za/~matthew/>



**SAAO**  
South African  
Astronomical Observatory

### ASTRO-OBSERVATION projects

#### **Ph.D. Position-4:**

**Funding Period:** (2019-2021)

**Funding Amount:** R180 000 pa

**Requirement:** Masters program (MSc) in astronomy or astrophysics.

**Closing Date:** 22 February 2019

**key words:** *galaxy structure and evolution; edge-on galaxies; Milky Way counterparts*

**Description:** We seek applicants to undertake a three-year Ph.D. program to measure the vertical stellar age gradients and kinematics in nearby, edge-on galaxy disks that look similar to the Milky Way. The observational component involves obtaining new integral-field spectroscopy (IFS) in the visible and near-infrared. Analysis includes applying simple dynamical models with different star-formation histories to match both the observed distribution of mass and the vertical stratification of stellar populations. The scientific aim of this program will be to determine if the Milky Way is a typical spiral galaxy, and provide constraints on the possible ways in which stars are formed and assembled in galaxy disks.

In the first year of the program the student will work with public integral-field spectroscopic data from SDSS-IV/MaNGA. In the second and third year of the program the student will take their own observations of very nearby galaxies using new integral-field units for the visible and near-infrared spectrographs on SALT and/or existing facilities at the WIYN 3.5m telescope. These data will be used to measure the gas and stellar velocities as a function of radius and height. Neutral hydrogen or molecular (CO) data, where available, will be used to supplement optical data in regions of high extinction. As time and launch-schedule permits, the student will propose for and analyze near- and mid-infrared spectroscopy from the James Webb Space Telescope to extend observations to higher redshift.

The student will work with Prof M Bershady (SAAO SARCHI), his research team of observers and instrumentalists, and collaborators around the world. Bershady also serves as Project Scientist for SDSS-IV, and has access to the WIYN 3.5m telescope through the UWisc. The student will have the opportunity to travel to UWisc.

**Requirements:** Applicants need to have successfully completed an undergraduate degree (BSc) and Masters program (MSc) in astronomy or astrophysics.

**Application:** A statement of interest, curriculum vitae, and at least two letters of recommendation from a professional engineer, Ph.D. research scientist, or faculty should be sent to [mab@saa0.ac.za](mailto:mab@saa0.ac.za) (Matthew Bershady).

\***Professor Bershady** is a South African Research Chair (**SARCHI**) located at SAAO, and cross-appointed at the University of Cape Town and the University of Wisconsin-Madison. **Inquiries and applications should be sent to [mab@saa0.ac.za](mailto:mab@saa0.ac.za).**