EIGHT FUNDED* RESEARCH POSITIONS - 2019

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ASTRO-INSTRUMENT projects
Masters Position-7:
Funding Period: (2019)
Funding Amount: R120 000pa
Requirement: Degree in a related discipline and interest and ability to learn about relevant elements of these disciplines is required
Closing Date: 22 February 2019
key words: *astronomical instrumentation or mechanical engineering; fibre-optic test facility development and construction lead; slit-mask integral-field unit design.*

Description: We seek applicants to undertake a one-year Masters project on *co-leading* the design and construction of a fibre-optic test facility for next-generation, high-performance astronomical instruments for the Southern African Large Telescope and other telescopes at the South African Astronomical Observatory in Sutherland. The fibre-optic test facility will be a bench-top optical laboratory instrument assembled and used in Cape Town to evaluate a two-dimensional fibre array (integral field unit, or IFU) built for the Southern African Large Telescope prime-focus spectrograph.

Project scope: The Masters project will include high-level design and layout of the fibre-optic test facility; co-mentoring the honors/bursary student in custom-design of lens and fibre optical mounts and motion stages; co-mentoring the honors/bursary student in the integration and alignment of commercial and custom-designed mounts and stages into the fibre-optic test facility; and developing the commercial CCD/CMOS hardware and software interface. As time and funding permits, the project may include the design of micro-prism mounts and alignment jigs for the slit-mask IFU, and travel to the University of Wisconsin where an earlier-generation fibre-optic test facility exists.

The student will work with Prof M Bershady (SAAO SARChI), his research team of observers and instrumentalists (including a bursary student working on the same project, and Ph.D. student leading the development of the slit-mask IFU), members of the SAAO Machine Shop, as well as other members of the SAAO technical staff. The successful applicant will define the scope of their program in consultation with Bershady based on their expertise, interests and career goals, and the needs of the project.

Requirements: BSc or BTech degree in a related discipline and interest and ability to learn about relevant elements of these disciplines is required. Applicants need not have a background in astronomical instrumentation or fibre optics; basic knowledge of astronomy and geometric optics is preferred.

Application: A statement of interest, curriculum vitae, and at least one letter of recommendation from a professional engineer, Ph.D. research scientist or faculty should be sent to mab@saao.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@saao.az.za**.