Kanty Astronomy Research Group (KARG)

Call for 2025 Research Internship Programme

What is KARG?

Kanty Astronomy Research Group (KARG) is an extragalactic junior research group affiliated with the South African Astronomical Observatory (SAAO) and the University of Antananarivo. The group is led by Dr. Zara Randriamanakoto, a Malagasy astronomer at SAAO with research focus areas on young massive star clusters (YMCs) and radio active galactic nuclei (AGN). KARG is composed of PhD and MSc students as well as part-term research interns working on various projects covering these fields.

KARG's research internship is a flagship programme for undergraduate and postgraduate students in STEM who wish to acquire hands-on experience in astronomy research, addressing a gap in opportunities that are essential for developing a career in the field. The first round of internship was conducted this year as part of the Star Clusters in southern Collisional Ring Galaxy (SC2RG) survey project and focused exclusively on collisional ring galaxies. Five out of the six selected short-term interns based in Madagascar and South Africa to participate to this initial programme successfully completed their internship in August 2024.

The 2025 call for research internship programme

This round of research internship is designed exclusively for Malagasy students and with two internships awarded to undergraduate and/or postgraduate candidates. Selected candidates will work part-time for a minimum of three months on projects focusing on star clusters or radio galaxies.

Subject to approval from the University's head of astronomy, these internship projects could potentially be upgraded into Master's thesis projects. Another highlight of the internship is the possibility to present key results from the project during astronomy conferences such as Malagasy national Astronomy Meeting (MAM) and the African Astronomical Society (AfAS) Conference. Subject to satisfactory performance, interns may receive a reasonable stipend at the end of the programme to cover incidental expenses, such as internet costs and local transports.

Below is the timeline of the internship.

Call for applications open	08 December 2024
Application deadline	08 January 2025
Interview of shortlisted candidates	Late January 2025
Results announced & MoU signing	Late January 2025
Internship starts	Mid-February 2025
Internship ends	Late May 2025

Your profile

Interested candidates should meet the following requirements to be considered for the internship:

- Based in Madagascar;
- Undergraduate students currently enrolled in Science subjects (STEM) or Postgraduate students currently enrolled in Physics or Computer Science;
- With basic programming skills and good English communication[1];
- Not engaged in any ongoing research thesis during the internship period;
- Committed to work part-time on the projects and attend monthly group meetings;
- Keen to participate in KARG's outreach initiatives. The research group is actively engaged in outreach activities such as *Le Rendez-Vous des Astrophiles* and *SheMatters*. The

[1] All written communication including email exchanges and the literature review will be conducted in English.

latter is a STEM-based community engagement that leverages astronomy to inspire girls from disadvantaged communities.

How to apply?

Interested candidates should submit the following PDF documents written in English before **08 January 2025** to zarastro.karg@gmail.com:

- CV (two pages max) showing your academic history and qualifications;
- A statement of interest explaining your motivation for applying and your expectations from the internship. Your preferred project should be indicated in your statement of interest.

Available projects

Project-1: Star-forming regions

Title: Constraining the star formation history of AM0144-585

Bright kpc-sized clumps, which incorporate many individual young massive star clusters, host the largest units of star formation (SF) in a galaxy. They represent the smallest structures that can be resolved in high-z clump galaxies, and hence are worth to be studied. This project studies at least a dozen of star-forming clumps in the peculiar galaxy AM0144-585 to better understand the origin(s) and evolution of SF mechanisms in galaxies with extreme environment.

Project-2: Radio galaxies

Title: The nature of a LoTSS DR2 giant radio galaxy

Giant radio galaxies (GRGs) represent the largest single structures in the universe with physical sizes exceeding 700 kpc. Since GRGs are believed to represent the final stage of the evolution of all radio galaxies, their study is relevant in understanding how the latter evolve over cosmic time and the processes that govern their growth and evolution. This project aims at better understanding the possible origin of the giant sizes of such objects by conducting a comprehensive analysis of a GRG in the field of LoTSS DR2.

Contact details

For inquiries, please contact Ms Bénite Tantely at:

- www.zarastro.org
- zarastro.karg@gmail.com
- @kantygroup
- (+261) 38 62 731 00