



Report on the APhRICA 2025-2027 selection of participants

The call for the selection of the 2nd cohort (2025-207) of participants in the APhRICA training programme was open online until August 31st, 2025 (see figure on the right).

124 applications were received with the following distributions:

- 65% MSc students, 20% PhD students, and 15% Faculty;
- 85% from physics departments and the rest from chemistry, mathematics, materials science, biochemistry / nanomedicine, geophysics, biomedical and information engineering.

The MSc and PhD students from 22 universities in Kenya¹, 2 in Tanzania² and 1 in Uganda³ were invited to take a written test in 8 different test centers⁴. The support from colleagues in the different locations who invigilated the examination is highly appreciated. The written test took place in the same day in all the test centers in Kenya and Uganda. Due to the local instabilities, a different date had to be chosen in Tanzania. A dedicated online (moodle) platform was used to upload the exercises.

The written test was followed by an online oral interview for the shortlisted students. Both the written examination and the oral interview focused on basic mathematics topics (BSc level), identified as prerequisites to fruitfully attend the training programme. The topics had been communicated to students in advance, along with an appropriate selection of reading material.

Finally, 6 students and 4 faculty have been invited to participate in the 2025-2027 APhRICA training programme. They will join the EAIFR MSc students in Kigali, Rwanda, in December (and in March) to attend an introductory course on quantum mechanics. They will all then attend a school in Nairobi in July 2026.

In parallel, at the same dates and locations, the 1st cohort APhRICA participants will complete their training on computational quantum many-body physics.

¹ Kibabii University, Moi University, University of Eldoret, Turkana University College, University of Embu, Tom Mboya University, Kabarak University, Kaimosi Friends University, Masinde Muliro University of Science and Technology, Pwani University, Maseno University, Kisii University, Jaramogi Oginga Odinga University of Science and Technology, Maseno University, South Eastern Kenya University, Machakos University, Meru University of Science and Technology, Kenyatta University, University of Nairobi, Technical University of Kenya, Egerton University, Masaai Mara University

² Nelson Mandela African Institution of Science and Technology, University of Dodoma

³ Makerere University

⁴ Nairobi, Mombasa, Nakuru, Eldoret, Kisumu, Kakamega, Kampala, and Arusha

Advanced Physics Training and Collaboration with Africa (APhRICA)

Call for the 2nd Cohort - 2025-2027

Scope

APhRICA is a two-year training programme in condensed matter physics that combines 6 two-week intensive courses, in Rwanda and Kenya, together with online activities for the entire duration of the programme. The introduction to the theoretical frameworks of density-functional theory and many-body perturbation theory is completed by practical training on popular computer codes such as Quantum Espresso and YAMBO. Participants learn to simulate, analyse, and predict the electronic and optical properties of materials.

APhRICA is open to graduate students as well as faculty in Physics, Chemistry and Applied Mathematics. Participation of female students and faculty is strongly encouraged.

Participation in APhRICA is free of cost: travels and accommodation for the different activities are covered by the organization. Participants engage into advanced training activities for the entire duration of the programme.

APhRICA promotes international collaboration and networking activities. It aims to strengthen local capacity and mitigate brain drain.

Selection

APhRICA attracts top-level graduate students through a rigorous selection to carefully assess their initial knowledge and abilities.

Interested faculty are also highly advised to apply and participate. Selection will be based on shared interests and alignment with APhRICA goals.

Program

- September 2025: Selection of participants
- December 2025 & March 2026 (EAIFR): Quantum mechanics: basic + advanced
- March 2026 (TruK): Fundamentals of Density Functional Theory (DFT)
- December 2026 & March 2027 (EAIFR): Many-Body Perturbation Theory (MBPT): basic + advanced
- June 2027 (TuK): Computational aspects of DFT and MBPT with the [YAMBO](#) code.

Topics

- Mathematical methods for theoretical and computational physics and engineering;
- Computational methods for electronic and optical properties of materials.
- Theoretical and applied physics for computational materials design.

Expected Outcomes

- Training the next generation of African researchers in condensed matter physics, computational materials science and applied mathematics.
- Increased networking of researchers in East Africa and enhanced connections with Europe.
- Possibility for the participating institutions to improve the curricula in Physics and Mathematics and to develop institutional MoUs for the exchange of students/faculty.

Organisers

Prof. George Amolo, Technical University of Kenya, Kenya.
Dr. Michael Atambo, Technical University of Kenya, Kenya.
Dr. Muriel Gobin, Institut National des Sciences Appliquées, France.
Dr. Korir Kiprono, Moi University, Kenya.
Dr. Andrea Marini, CNR, Italy.
Prof. Catherine Meriaux, ICTP-EAIFR, Rwanda.
Dr. Victor Odari, Masinde Muliro University of Science and Technology, Kenya.

For enquiries reach out to the organisers: aphrica@tukyenna.ac.ke



<https://forms.gle/sRLXhMg33dX7A7hm8>

Deadline August 31st 2025

APhRICA

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