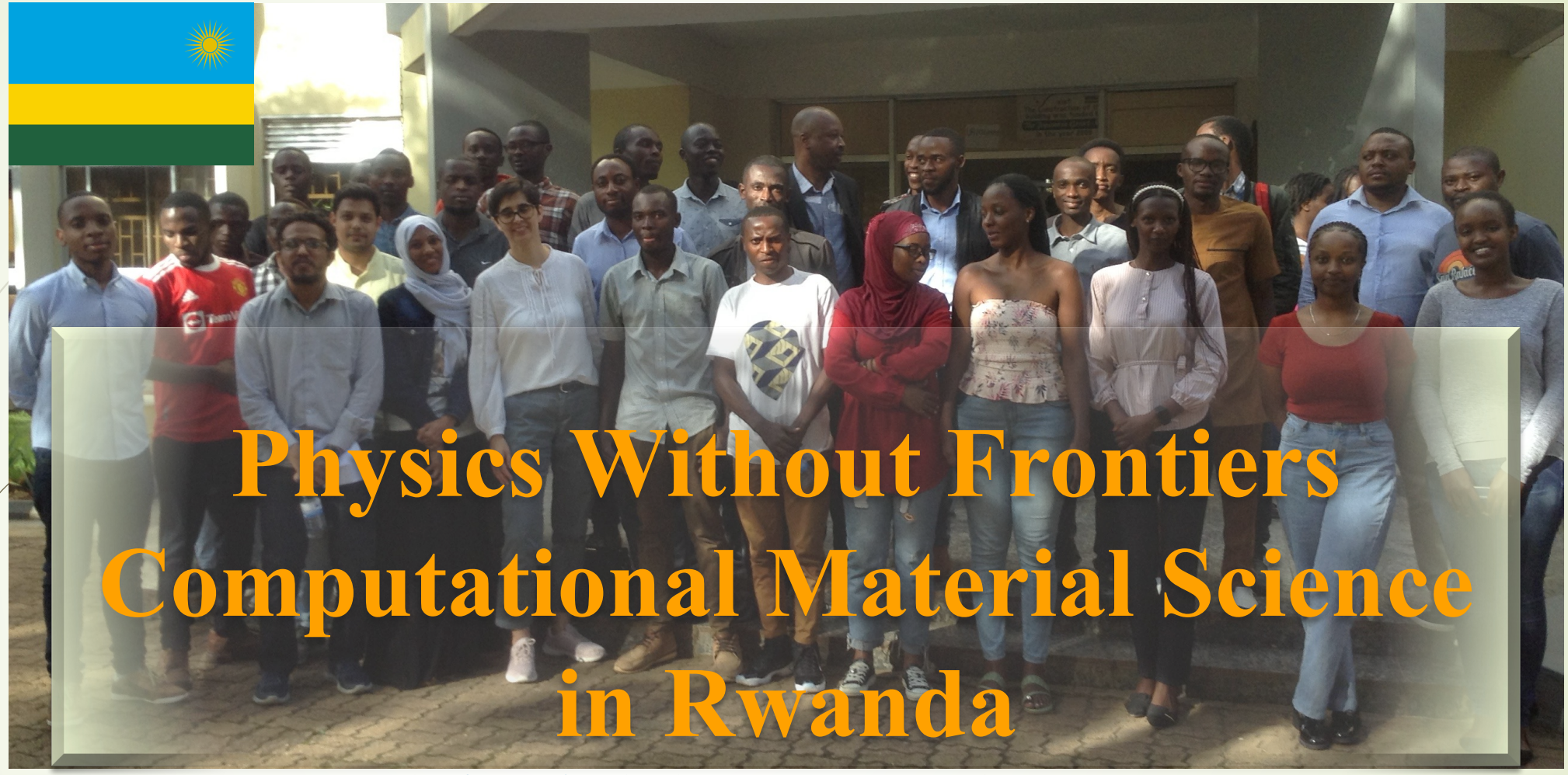


Physics Without Frontiers Computational Material Science in Rwanda

Omololu Akin-Ojo (EAIFR, Rwanda)

Natasa Stojic & Abhishek Kumar Adak (CMSP, ICTP, Italy)

Physics Without Frontiers Annual Meeting 2023

Background and Motivation

- In Rwanda, computational material science is not an active field of research.

- Earlier notable efforts:
  - A few workshops/training exposures towards occasional use of quantum chemistry software for computational work on materials.
  - Undergraduate physics courses with specialization in material science at the university primarily focus on experimental aspects.

Background and Motivation

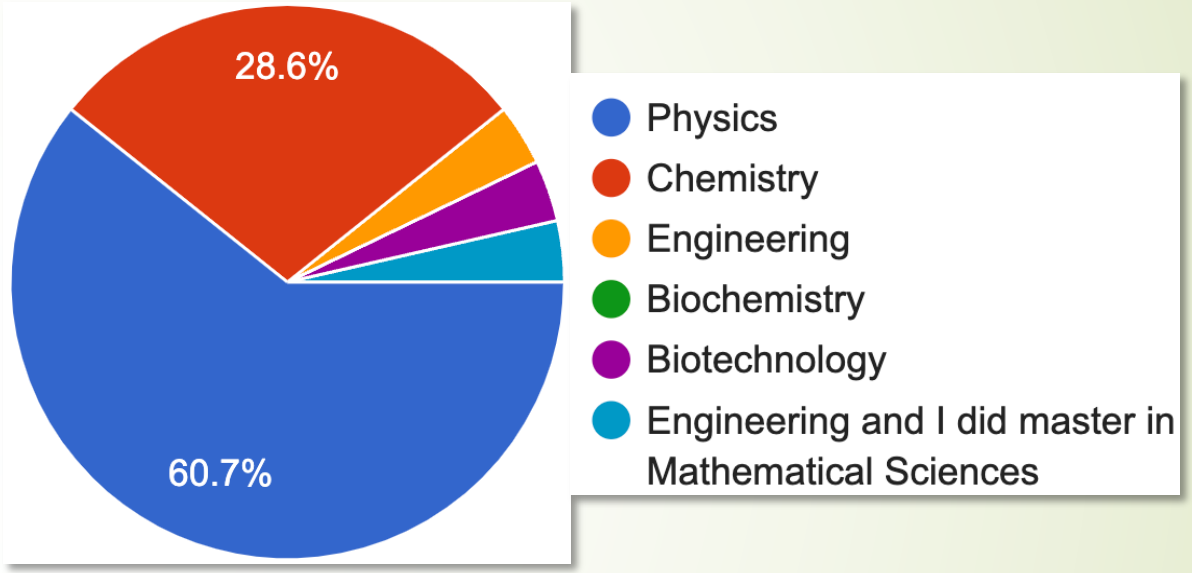
- In sub-Saharan Africa, Rwanda is one of the top-performing countries in education and research. ➡ Hopes for a wider impact of an activity on the whole region.
- There were few localized efforts to develop the field at EAIFR, Kigali.

- Need for a dedicated activity open for the whole University of Rwanda, reaching a large number of students.

Our team

- Prof. Omololu Akin-Ojo, EAIFR, ICTP associate.
- Dr. Natasa Stojic, CMSP, ICTP.
- Dr. Abhishek Kumar Adak, CMSP, ICTP.

Participants!!!



- **Attendees are mostly from the University of Rwanda and neighboring institutes in Kigali.**

Our goal and how we planned the school

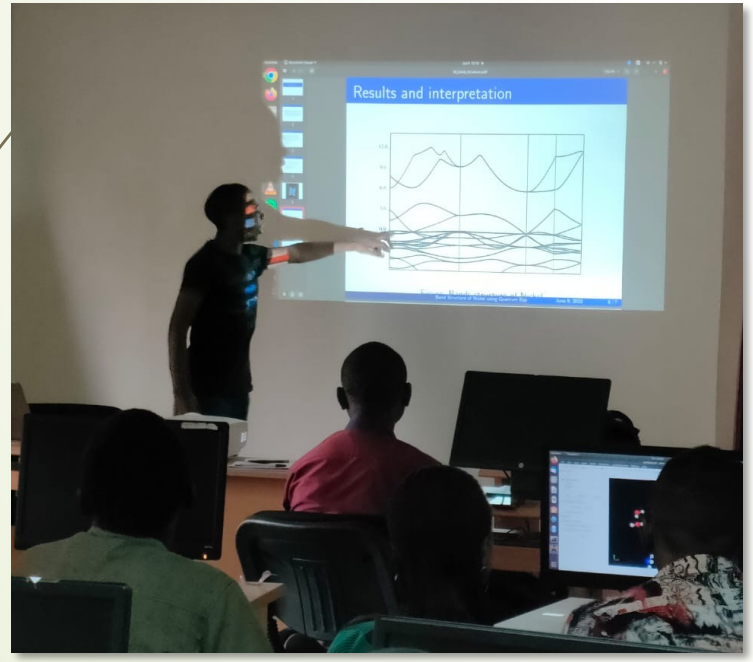
- **Goal:** Make Computational Materials Science accessible and popular among students in different disciplines, particularly physics, chemistry, and engineering.
- **Plan:** Revisit the understanding of theoretical formulations at the fundamental level.
- Expose students from undergraduate and master's level to the modern-day computational tools used globally.
- Motivate the students to start learning computational science and getting used to basic analysis and notions.
- Among 50 participants in total 32 were awarded the certificates for full attendance, with 11 women on board.

A Sneak Peek into our Activities

- In-person lectures and presentations including online interactions with experts.
- Experts introduce topics of their expertise and describe the state of the field and preferred computational tools.
- Many hands-on sessions.
- The career opportunity session attracted huge interest.
- Ample opportunities for networking (coffee breaks, lunch together).
- Students' presentations.

Students Projects & Presentations

- Students were given small model projects on which they worked as a team and discussed among themselves.
- A few of the students presented the results obtained from their projects.



PWF team of volenteers

Omololu, ICTP

Natasa, ICTP

Abhishek, ICTP

Martina, ICTP

Uriel, ICTP

Nicola, ICTP

Adu, ParityQC

Ivan, ICTP

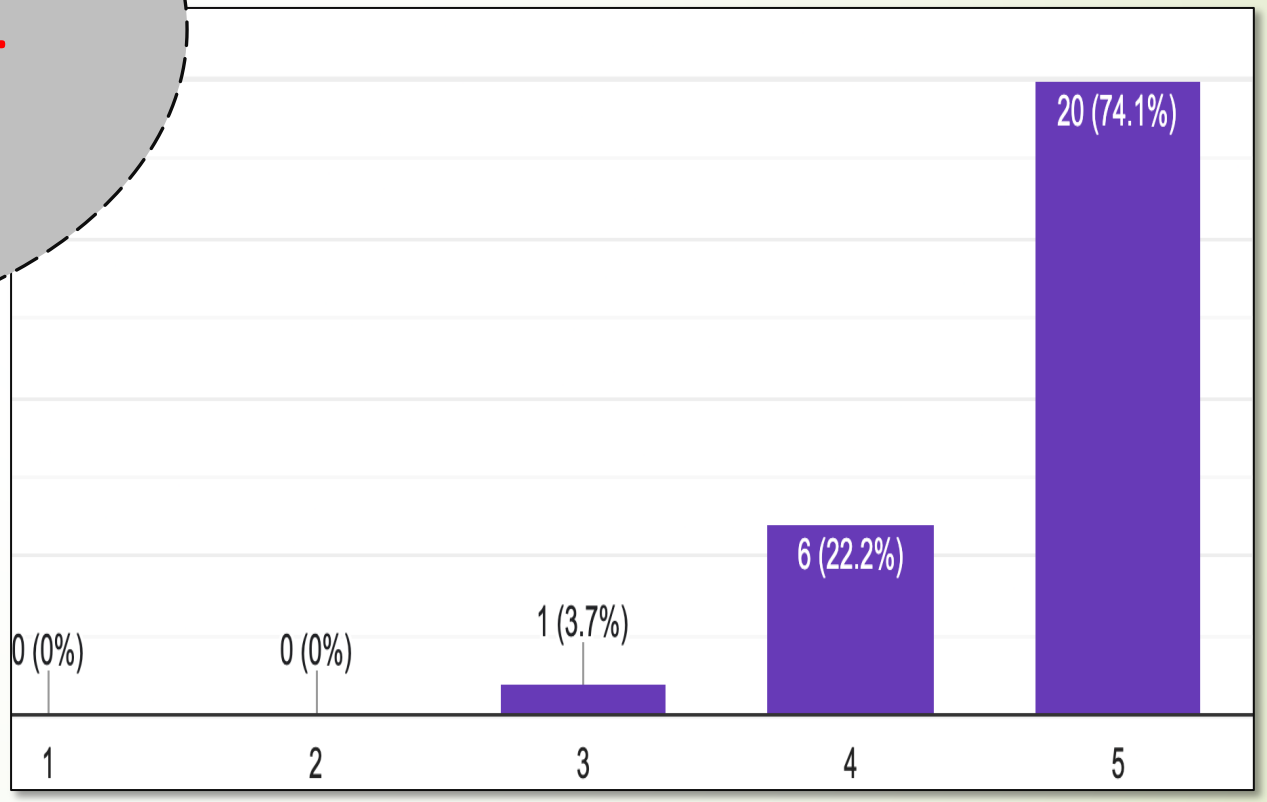
Shobhana, JNCASR

Impact; feedbacks and testimonials

"A transformative experience for me. I gained new skills related to computational techniques to study and design materials. The knowledge and skills I acquired during the school have greatly enhanced my academic journey."

Evode, Nyagatare Rwanda
Undergarduation, Chemistry

- Received lots of positive and constructive feedback from the participants



How useful the school was!

Impact; feedbacks and testimonials

"I enjoyed the courses, especially those presented face to face. They urged me to continue my Masters in Physics" **Vincent Sugira, University of Rwanda.**

"Please come back in the future."

"I am keenly interested in the field of Computational Physics, briefly school fulfilled my expectations and improved my level of understanding."

"It was very useful. I am now more motivated to study computational materials science."

Success Stories & Plans for the Future

- A very successful format allowing many exchanges and discussions among volunteers and experts.
- Our large group of PWF volunteers with specific topics of expertise helped introduce the field from different angles and for different backgrounds.
- The organizers are in touch with students, helping with their future steps in becoming material scientists.
- The effectiveness of this activity was partly seen in the international ASESMA 2023 advanced school attended by more than 10 of our participants.
- for future activities: larger support is needed for participants from further away.