

# **Riflessioni su attività matematiche nel Sud Globale**

**Diletta Martinelli (Università di Amsterdam)**

**Pomeriggi UniCAmente Matematici, 7 Maggio 2025**

# Something about me

- Assistant Professor at the Korteweg-de Vries Institute for Mathematics at the University of Amsterdam.
- Area of research: Algebraic Geometry (in particular Birational Geometry and the Minimal Model Program).

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- Assistant Professor at the Korteweg-de Vries Institute for Mathematics at the University of Amsterdam.
- Area of research: Algebraic Geometry (in particular Birational Geometry and the Minimal Model Program).
- New role: 50% position within the Faculty of Science at the University of Amsterdam: coordinator of academic collaborations with the Global South and in collaboration with the International Science Program of Uppsala University.

# Something about me

- I am a member of the European Mathematical Society Committee for Developing Countries.
- I am a CIMPA Scientific Officer.
- I am on the board of the LMS Program Mentoring African Research in Mathematics.
- I am on the management team of the newly established Africa-Europe Cluster of Research Excellence in Mathematics.
- I am collaborating with the mathematics section at ICTP.
- I am coordinating a working group of the Italian Mathematical Union dedicated to International Cooperation with the Global South.



# Cooperazione Internazionale con il Sud Globale

## Gruppo di Lavoro - Unione Matematica Italiana

L'idea di creare un gruppo di lavoro UMI dedicato a progetti di *Cooperazione Internazionale con il [Sud Globale](#)* nasce come tentativo di sintesi delle tante iniziative in questo ambito da parte di matematiche e matematici italiani. Molti dei membri del gruppo, infatti, hanno varie esperienze di insegnamento, di organizzazione di scuole e conferenze, di progetti di scambio e collaborazioni di ricerca con diversi atenei in vari paesi del Sud Globale, si veda la [Mappa Interattiva](#).

Siamo convinti dell'enorme impatto sociale di questi progetti e vogliamo impegnarci perché vengano adeguatamente riconosciuti e valorizzati, ripensando all'internazionalizzazione degli atenei universitari da un punto di vista davvero globale e inclusivo.

<https://sites.google.com/view/umi-gdlcmsudglobale/home-page>



# 2018: First trip to Africa



African Institute Mathematical Sciences (AIMS)  
South Africa (2018).



# nexteinstein.org



# AIMS - Teaching model

- Three-week intensive courses.
- Very nice community spirit.
- Exposes the students to an international environment and enlarge their network of contacts.

# AIMS - Teaching model

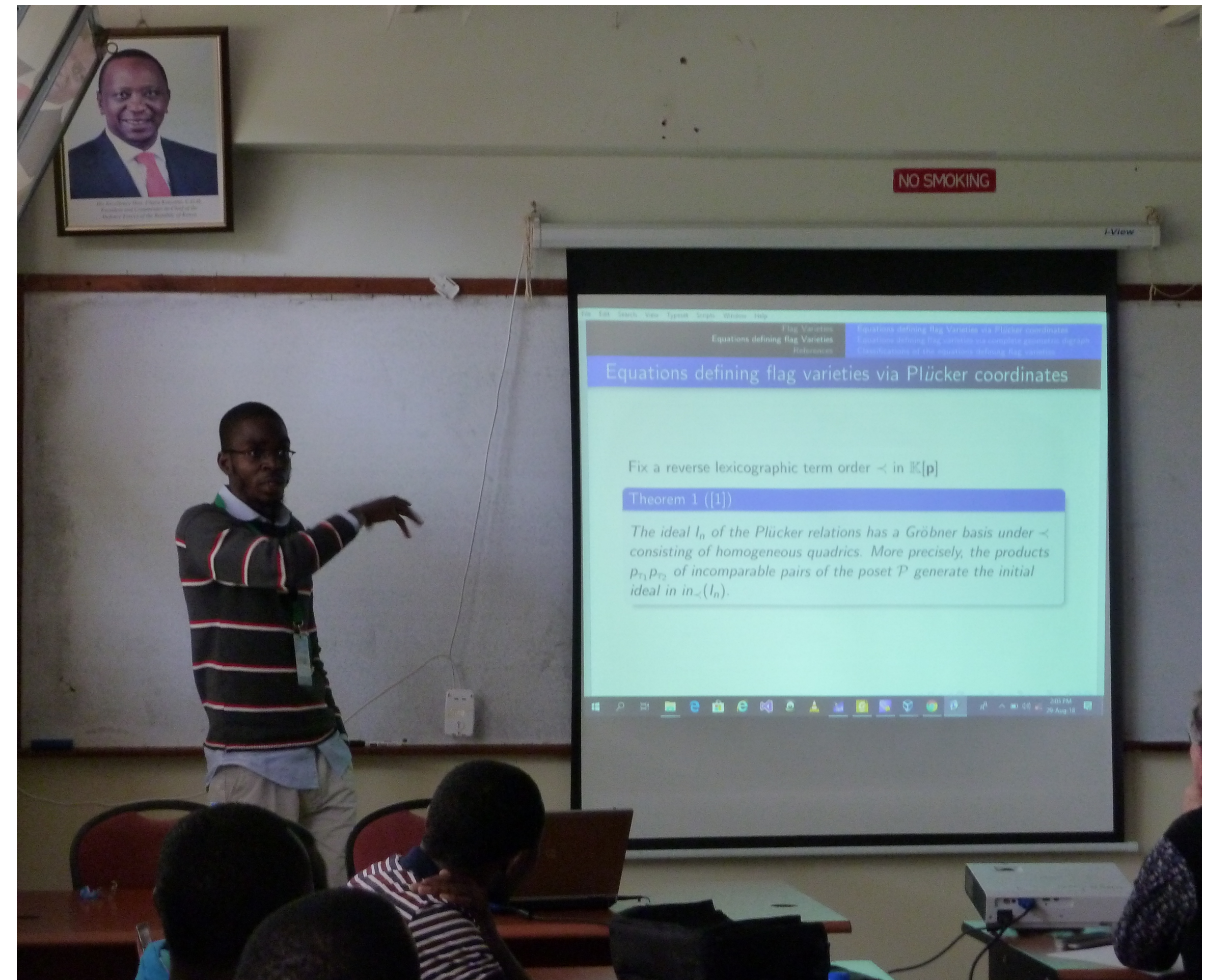
- Three-week intensive courses.
- Very nice community spirit.
- Exposes the students to an international environment and enlarge their network of contacts.
- Little time to properly digest the material.
- Not a standardised curriculum.



# Nairobi workshop in Algebraic geometry (2018)



The beginning of my mini-course.



Student presentation.



# Difficulties and Opportunities

- Scientific isolation.
- Huge teaching duties (1 lecture per 1000 students with no TA).
- Very hard to access international funding.
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- Scientific isolation.
- Huge teaching duties (1 lecture per 1000 students with no TA).
- Very hard to access international funding.
- Bureaucratic barriers often obstruct career tracks.
- Large number of young minds: by 2050, as much as 40-45% of youths under 25 will be African!
- Demand for well-trained Mathematics graduates from industry, banking, insurance companies, etc.
- Emerging consensus among development professionals that universities and R&D are worth investing in.



# 2020: AIMS Cameroon in Limbé



Final day of class with all my students.

# The pandemic came

- Moment of self-reflection.
- Out of the radar.



# The pandemic came

- Moment of self-reflection.
- Out of the radar.
- Shift in focus. Creating a new job.

# Pandemic Years: Online projects

- Summer Mentorship Program Mfano Africa, Summer 2021.
- 11 Mentees, paired with International Mentors.
- Coordinated by Geoffrey Mboya, PhD student in Oxford.



Home

**Mfano Africa - Oxford Mathematics Virtual Mentorship Programme**

# Virtual Nairobi Workshop (August 2021)

- Around 50 participants from 10 countries.



Virtual Picture with some of participants.

# Hybrid/online events

## Take home messages

- They can work!
- They should be based on existing connections.
- Collaboration with local colleagues on the ground.
- They are more sustainable! We should learn how to continue these activities while flying less.

# Supervising students

- I have supervised 10 students from the Global South (Congo, Madagascar, Cameroon, Pakistan, Nigeria, Suriname. 7 males and 3 females).
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# Supervising students

- I have supervised 10 students from the Global South (Congo, Madagascar, Cameroon, Pakistan, Nigeria, Suriname. 7 males and 3 females).
- Supervision has been mainly online.
- Students are talented and incredibly motivated!
- The exposure to advanced mathematics is quite limited.
- The majority want to continue with a PhD in Europe/US and then come back.
- They apply for master programmes (not so many scholarships/long track before landing in a PhD position).



# Many other events

- Workshops in Nigeria, Ghana, Uganda, Cuba, Rwanda. More in the planning phase!
- Scholarship programmes for female Afghan students.
- East Africa Maths Olympiads, Kigali 2023.
- Online mentoring programmes.
- Online reading groups.



*Algebra, Topology and Application. Nigeria, July, 2023.*



# Many other events

- Collaborations with the Surinamese Mathematical Community.
- Outreach activities in collaboration with SAMI (Supporting African Mathematics Initiatives, <https://samicharity.co.uk>)



Delivery of decks of mathematical cards to King's College Budo, Kampala, Uganda.



# International Mathematics Master (IMM)



Stefano and the first cohort of IMM students.

- Stefano Luzzatto, Senior Research Scientists at ICTP. Scientific Coordinator of the IMM.
- Master program hosted at LUMS University (Lahore) in Pakistan.
- Taught by local and international Faculty.
- All students are provided with scholarships.

# IMM - Pakistan

- Courses are taught by a team of lecturers.
- Commitment from each lecturer: 2-week course, series of online lectures.
- Flexible.
- It requires a lot of coordination!



# Group theory and the Rubik Cube

Lahore, October 2022





# Plan to start new IMM nodes



Kigali, March 2022. Meeting with the local faculty.

- 2024: Inauguration of IMM Algeria
- Ongoing-discussion also at the University of Rwanda and the East African Institute for Fundamental Research (ICTP affiliated centres).



# Final reflections

- Hard to professionalize these activities.
  - Now pilot scheme at the University of Amsterdam for three years.
  - Long-term plan in the making :)
- Personal learning process.
- Important to maintain a decolonising approach to international collaborations.

# Final reflections

- Hard to professionalize these activities.
  - Now pilot scheme at the University of Amsterdam for three years.
  - Long-term plan in the making :)
- Personal learning process.
- Important to maintain a decolonising approach to international collaborations.
- A lot of enthusiasm!
- Inclusive approach to internationalisation are more and more central to the agenda of many institutions.



# Just a drop in the ocean?

- What is the real impact of this activities?
- How can you make a real difference?
- What kind of mathematics is relevant for the local context?

# Some food for thoughts

*“Why only in Africa do we have to choose between clean water and algebraic geometry?”*

*David Ssevirri (Professor at Makerere University, Uganda)*

*“The best way to be prepared for future technologies is training students in problem solving.”*

*Jared Ongaro (Professor at the University of Nairobi, Kenya)*

*“We need to think of initiatives that have the potential to make larger-scale impact.”*

*David Stern, IDEMS International*

*(Innovations in Development, Education and the Mathematical Sciences)*

*STACK, LEAN for Africa?*

*“É estremamente importante offrire ai nostri studenti modelli diversi e alternative alla loro realtà accademica spesso limitata e difficile.”*

*Giovanni Marelli (Professor at the University of Namibia)*

# Would you like to be involved?

- Possibilities of teaching and supervision, online or in person.
- Organise a workshop or a school.
- Create new educational material.
- Outreach activities.
- Maths Olympiads training.
- Tutor in one of the SAMI maths camps.



# Grazie!



University of Suriname, Paramaribo, February 2024



School of Physics and Mathematics without Frontiers,  
La Havana, Cuba, March 2024