

Modelling deformation in biological cells

Dr Rhoda Hawkins (AIMS Ghana & University of Sheffield, UK)

DATE: Monday, 13 April 2026 | 16h00–17h00 SAST

VENUES:

- **Stellenbosch University:** Neelsie Cinema
- **University of the Witwatersrand:** Room P215, 2nd Floor, Physics Building
- **North-West University:** Seminar Room K310, Physics Building G5
- **Online**

--- A recording of the talk will be published on the NITheCS YouTube channel afterwards ---

ABSTRACT

Biological cells are made up of soft, dynamic, active matter. They are surrounded by lipids and full of proteins. Certain proteins form filaments and others are called molecular motors because they can move along these filaments. Such proteins are able to exert forces by consuming biochemical energy. These forces can cause deformations of the cell nucleus and the cell itself.

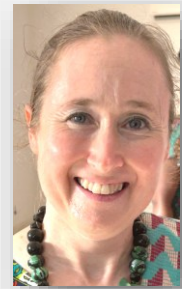
In this talk I will discuss some examples of this fascinating behaviour and how we are modelling the mechanisms using analytical calculations and numerical simulations. I will also discuss our attempts to compare our models to experiments on live cells.

BIOGRAPHY

Rhoda's long-term affiliation is with the University of Sheffield, UK, where she began as a lecturer in 2011 after completing her PhD in Leeds and postdoctoral positions in Amsterdam, Paris and Bristol.

Over the past three years, she has been based in Ghana as the Academic Director of the African Institute for Mathematical Sciences (AIMS) Ghana.

She is currently visiting Prof Kristian Müller-Nedebock in the Physics Department at Stellenbosch University.



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