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National Institute for
Theoretical and Computational Sciences

COLLOQUIUM

What lurks in the dark? Gravitation and other tense cosmic stories

Prof Amare Abebe (North-West University)

DATE: Monday, 7 April 2025 | 16h00–17h00 SAST

VENUES:

- Neelsie Cinema, Stellenbosch University
- Online

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

ABSTRACT

In this talk, I will give an overview of our current understanding of gravity and describe why it is the cornerstone on which our understanding of the universe is based. I will then discuss why, based on our knowledge from astronomical observations, we think our understanding of gravity is incomplete - leading to the introduction of the concepts of dark matter and dark energy and the more recent issues of cosmological tensions. The last part of my talk will highlight some of my group's recent work in modified gravity and alternative cosmological models to address the aforementioned cosmic conundrums.

BIOGRAPHY

Amare Abebe is a professor of cosmology at North-West University's Centre for Space Research (CSR), and the current director of the CSR. His research focuses on cosmological perturbations, large-scale structure formation, modified gravity theories, interacting dark fluid models, and tensions in cosmology.

He earned his BSc from Addis Ababa University and completed postgraduate studies at the University of Cape Town. Amare is a NITheCS Associate and a member of multiple scientific societies, including the International Astronomical Union and the African Astronomical Society.



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