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- - - WEBINAR - - -

Reconstruction methods in cosmology

Dr Konstantinos Dialektopoulos (University of Malta)

Friday, 13 June 2025 | 14h00 – 15h00 SAST
Attend online or in the Physics Seminar Room, Stellenbosch University

ABSTRACT

Reconstruction techniques are essential for understanding dark energy, cosmic expansion, and large-scale structure growth. These methods extract insights from cosmological data through parametric or non-parametric approaches. Parametric methods impose fixed functional forms, reducing uncertainties but potentially introducing biases. Non-parametric methods offer greater flexibility, making them ideal for exploring unknown cosmological functions. Both approaches have been used to investigate cosmological tensions, revealing possible deviations from the ΛCDM model. In this seminar will present an overview of reconstruction techniques and their implications for addressing current challenges in cosmology.

BIOGRAPHY

Konstantinos Dialektopoulos is a theoretical physicist specializing in gravity and cosmology. He holds a PhD from the University of Napoli "Federico II" and has held postdoctoral positions in Greece, China and Kazakhstan. The last two years he has been a MSCA fellow in Romania. while recently he joined the University of Malta as a researcher.

His research focuses on modified gravity theories, cosmological modeling, and black hole physics, with over 40 publications and more than 2500 citations. He actively contributes to international collaborations such as CANTATA and CosmoVerse and serves as a reviewer for leading journals. He is also experienced in numerical methods, symbolic computation, and machine learning applications in cosmology and gravitational physics.

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