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NITheCS COLLOQUIUM:

The Future: Machine Learning in Cosmology and Astrophysics

Dr Guo-Jian Wang (University of KwaZulu-Natal)

Monday, 16 October 2023 | 16h00 – 17h00 SAST

Venue: in person* and online

** Neelsie Cinema, Stellenbosch University*

--- Cheese and wine will be served at the venue ---

ABSTRACT

As telescopes receive vast amounts of data, cosmological and astrophysics research will become increasingly data-intensive. Facing massive data, how to process and obtain sufficient physical information from it is a huge challenge. With the rise of artificial intelligence technologies such as machine learning, machine learning plays an important role in cosmology and astrophysics research, leading to data-intensive scientific discoveries becoming a new paradigm for future research. In this talk, I will review some applications of machine learning in cosmology and astrophysics and look ahead to its importance in future research. I will also introduce some of our research results in this area, including the use of convolutional neural networks for component separation of sky survey data, the use of neural networks to estimate cosmological and astrophysical model parameters, and their potential role in future research.

BIOGRAPHY

Guo-Jian Wang is a postdoctoral researcher at the University of KwaZulu-Natal, South Africa. He received his PhD from the Department of Astronomy, Beijing Normal University in 2020. He is engaged in observational cosmology research. Currently, he focuses on exploring the potential application of machine learning in cosmology, 21 cm related data processing, and exploring the potential of artificial intelligence for cosmology and astrophysics discovery.

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