S E M I N A R

Dr Heba Abdulrahman
University of KwaZulu-Natal

Date:
Thursday, 3 October 2024

Time:
12h15-13h15 SAST

Venue:
- NITheCS Seminar Room
  University of KwaZulu-Natal
  Westville Campus
  3rd Floor, H-Block,
  School of Chemistry and Physics

- Online

Refreshments will be served

WHO SHOULD ATTEND?
This talk is intended to be accessible to postgraduate students. All are welcome!

ENQUIRIES:
Email Neli Mncube:
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Unifying the background with perturbations in Chaplygin-gas cosmology

ABSTRACT:
The major component of the matter energy density (about 85%) is made from dark matter, and currently, our Universe is experiencing an accelerated expansion. The discovery of the accelerating expansion of the Universe and the existence of dark matter are the primary indicators for the limitation of our knowledge of physics laws and those two uncharted territories of the Universe have opened a new era for the development of modern cosmology. In recent times, one of the most active areas of research in cosmology is trying to understand the nature of dark matter and dark energy. Different suggestions have been put forward to understand dark energy. The first suggestion is that the cosmological constant is the one responsible for the cosmic acceleration, and the second approach is the modification of general theory of relativity. Meanwhile, the Chaplygin gas model has been proposed to mimic the effects of dark energy at late times and dark matter prior to that, and can be a possible substitution to our standard model of cosmology.

The Chaplygin gas model acts as dark-matter and dark energy in the early- and late-universe epochs, respectively. In this talk, I will discuss the behaviour of this exotic gas in the background cosmology, and its impact on the formation of large-scale structures.

Dr Heba Abdulrahman is a Postdoctoral Research Fellow at the University of KwaZulu-Natal School of Mathematics, Statistics and Computer Science.

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