

MINI-SCHOOL

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Exploring some aspects of wormholes in modified gravity

Sayantana Ghosh (Birla Institute of Technology and Science, India)

Attend online: Wed 4, 11, 18 & 25 September 2024 @ 14h00-15h00 SAST

ABSTRACT

In this short course, we will provide some details on the wormholes and how these can be used for better understanding of gravity. We will mainly focus on how to construct wormhole solutions from general relativity, then move into the Null Energy Condition, which needs to be violated in order for a stable wormhole solution. Then we will discuss a viable mode of the wormhole using Casimir energy. We will also use the effect of Generalized Uncertainty Principle (GUP) on wormholes. Finally, we will conclude with non-commutative geometry and thin-shell wormhole. Overall, the lectures would be pedagogical and accessible to any graduate or undergraduate student who has taken a basic GR and QM course.

BIOGRAPHY



Sayantana Ghosh is currently a research scholar in the Mathematics Department at BITS-Pilani, Hyderabad campus in India. He previously earned his MS from the Indian Institute of Science (IISc, Bangalore) under the supervision of Prof Vijay Shenoy, focusing on the 'Tenfold Classification for Interacting Fermions and Relation with Homogeneous Spaces'. He completed his BSc in Mathematics and Physics at the Chennai Mathematical Institute (CMI). Additionally he spent a year as a PhD scholar in the Theoretical Physics Department at the Raman Research Institute. He has published seven articles, covering topics from wormholes and Gravastar to cosmology, primarily within the framework of teleparallel-based modified gravity.

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