

S E M I N A R



Jonathan Hakata
University of KwaZulu-Natal

Date:

Thursday, 10 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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1+1+2 Formalism in Spherical Spacetimes and Gravitational Induction

ABSTRACT:

This research explores the application of the 1+1+2 formalism to analyse spherically symmetric spacetimes and the dynamics of gravitational energy transfer within these geometries. The 1+1+2 formalism offers a framework for decomposing spacetime into manageable subspaces, enabling a detailed examination of the physical and geometric properties of spherically symmetric spacetimes crucial to general relativity and astrophysics. The study provides a novel geometrical classification of shear-free Locally Rotationally Symmetric spacetimes and investigates the dynamics of general relativistic gravitational induction using a 2-index Bell-Robinson tensor. Through this formalism, a consistent causal thermodynamical picture for gravity-matter interaction is constructed, offering new insights into astrophysical processes, black hole physics, and the theoretical foundation of general relativity.

Jonathan Hakata is a PhD Researcher at the University of KwaZulu-Natal School of Mathematics, Statistics and Computer Science. He is currently completing a PhD in Applied Mathematics, focusing on Astrophysics - General Relativity.

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