

S E M I N A R



Kavir Sumaraj
(University of KwaZulu-Natal)

Date:
Friday, 14 March 2025

Time:
12h15-13h15 SAST

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

WHO SHOULD ATTEND?

This talk is intended to be accessible to postgraduate students. All are welcome!

ENQUIRIES:

Email Neli Mncube:
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The Graph Homotopy Mergegram

ABSTRACT:

The work of Heather Harrington et al. presented in the paper '*Brain Chains as Topological Signatures for Alzheimer's Disease*', introduces the graph homotopy polynomial, a concept that characterises graphs up to homotopy equivalence. This research expands the idea of graph filtrations by formulating them as sequences of graph homotopy polynomials.

This presentation will focus on the core principles of the graph homotopy polynomial and introduce the graph homotopy mergegram, a construction that serves as a combinatorial invariant for sequences of polynomials. The graph homotopy mergegram builds on the mergegram framework introduced in the paper '*Combinatorial Topological Models for Phylogenetic Networks and the Mergegram Invariant*' by Pawel Dlotko, Jan Felix Senge, and Anastasios Stefanou.

We will conclude by exploring the stability properties of the graph homotopy mergegram and potential future directions for this line of research. This is joint work with Anastasios Stefanou, Paweł Dłotko, and Jan Felix Senge.

Kavir Sumaraj is a Masters student at the University of KwaZulu-Natal.

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