NITheCS
National Institute for
Theoretical and Computational Sciences

NITheCS WEBINAR:

A Closer Look at Freudenthal and Rim-compactness

Dr Simo Mthethwa (University of KwaZulu-Natal)

Friday, 1 March 2024 | 13h00 – 14h00 SAST

Venue: online

ABSTRACT

It is part of the folklore that the classical construction of the Freudenthal compactification for topological spaces uses some choice principle. In particular, this construction rests on the Boolean Ultrafilter Theorem (the proof of which uses Zorn's Lemma). The frame-theoretic construction of this compactification does not depend on any choice principles. In the talk, I shall recall this purely constructive construction of the Freudenthal compactification. This compactification appears to be understudied in the constructive terrain of point-free topology, and very few facts are known about it; it is the minimal perfect compactification and has a zero-dimensional remainder. The talk aims to contribute some new insight in this direction. Here are some selected results that will be exhibited:

A. The remainder of the Freudenthal compactification is, in fact, zero-dimensionally embedded (this is stronger than zero-dimensionality).
B. Rim-compact frames are precisely those frames having a compactification with a zero-dimensionally embedded remainder.
C. The Freudenthal compactification is the least upper bound of a certain well-known class of compactifications of regular continuous frames.

BIOGRAPHY

Dr Simo Mthethwa is a senior lecturer at the University of KwaZulu-Natal, where he did his undergraduate and postgraduate studies. He does research in point-set and point-free topology and supervises post-graduate students in these fields. Dr Mthethwa's research is largely funded by the NRF, the DSI-NRF CoE-MaSS, the UCDP, and his home institution. He is a member of the South African National Committee for the International Mathematical Union (SANCIMU) from 2020 to date and a director at Mthethwamatics NPC - a movement that seeks to educate the general public about mathematics and its associated careers.

REGISTER
TO ATTEND

Visit https://bit.ly/3OOrvvR
or scan:

SUBSCRIBE
TO THE NITheCS MAILING LIST:

science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

NRF National Research Foundation

Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT