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**National Institute for
Theoretical and Computational Sciences**

NITheCS Colloquium
Monday, 7 March 2022, 16h00 – 17h00
Dr Cerene Rathilal (University of Johannesburg)

"Pointfree Topology: some results on the Wallman compactification in frames"

ABSTRACT

Pointfree topology is a subject where the primitive objects of study are called frames or locales. In pointfree topology, one works with an abstract lattice of open sets of a topological space rather than the points themselves. The classical notion of a metric space generalized to a metric frame will be presented and the concept of a Property S metric will be discussed. Classically, García Máynez made use of a Wallman basis as a tool to characterise S-metrizable spaces (ie. spaces whose topology can be induced by a Property S metric).

In this talk, utilising the results of García Máynez, we shall provide an intrinsic pointfree characterisation of S-metrizability, in terms of the Wallman basis of a frame. We also show that every compact metric frame is a Wallman compactication of each of its dense sublocales and discuss a characterization of S-metrizability in frames.

BIOGRAPHY

Dr Cerene Rathilal is an early career academic who obtained a PhD in Mathematics from UKZN in 2019. She is a lecturer at the Department of Mathematics and Applied Mathematics at UJ. Her research areas of focus are Algebra and Topology, particularly Pointfree Topology.

Dr Rathilal is a JFAC for Algebra and Topology at the Centre of Excellence for Mathematical and Statistical Sciences (CoE-MaSS) and, more recently, a council member of the South African Mathematical Society (SAMS). Currently, she is a principle investigator on the Mathematical Structures Research Programme at NITheCS.

In March 2022, she will be launching a YouTube video series on the NITheCS channel to commemorate the International Day of Mathematics (IDM). The videos aim to expose students to research mathematics in South Africa, showcase local mathematicians and inspire a future generation of mathematicians.

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