

S E M I N A R



Dr Elena Caviglia
Stellenbosch University

Date:

Thursday, 24 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:
neli.mncube@nithecs.ac.za

Factorization systems on categories and double categories

ABSTRACT:

We will start by explaining the notion of a category and giving some examples of it, including the category of sets and the frame of open subsets of a topological space. We will then focus on the concept of factorization system on a category. This notion captures the very useful idea of decomposing complex mathematical structures into simpler ones. The archetypal example is given by Noether's first isomorphism theorem stating that every function can be seen as composite of a surjective function followed by an injective one by considering the image of the starting function.

In the second part of the talk we will move to the context of double categories that are a particular kind of two-dimensional categories. We will explain what a double category is and we will explore the examples of the double category of sets and relations and that of rings and bimodules. Finally, we will see how to generalize factorization systems to the context of double categories.

Elena Caviglia is a postdoc researcher at Stellenbosch University. She completed her PhD in Mathematics at the University of Leicester under the supervision of Frank Neumann. She is interested in Category Theory and its applications to Algebraic Topology and Algebraic Geometry. Her main research topics are stacks and their cohomology theories and Grothendieck fibrations. She is a teaching assistant at the Adjoint School 2024 for the project "Properties of Double Fibrations", mentored by Dorette Pronk.

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