

## S E M I N A R



**Dr Marco Abbadini**  
*(Université Catholique de Louvain,  
Belgium)*

**Date:**  
Thursday, 21 May 2026

**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?**  
All are welcome.

**ENQUIRIES:**  
Email Dr Cerene Rathilal:  
[RathilalC@ukzn.ac.za](mailto:RathilalC@ukzn.ac.za)

# On the symmetry between openness and compactness

## ABSTRACT

In my area of research, namely Stone dualities and their generalisations, one works with topological spaces that display a remarkable symmetry between open sets and compact saturated sets. For the purposes of this talk, you may simply think of compact saturated sets as compact sets: in Hausdorff spaces the two notions coincide. In some important classes of spaces, such as Stone spaces, spectral spaces, and stably compact spaces, this symmetry is complete. In others, most notably sober spaces, it is not complete, but it is still very strong.

Partly motivated by the appeal of symmetry itself, and partly by the practical advantage that symmetry can let us prove two results for the price of one, I investigated a mild generalisation of topological spaces in which open sets and compact saturated sets enjoy a fully formal symmetry. In this setting, once one proves a statement involving opens and compact saturated sets, one automatically gets a dual statement by exchanging the two notions.

My interest in these objects comes from the fact that they still admit a categorical duality, generalising the classical duality between sober spaces and spatial frames, but now in a context where openness and compactness are placed on completely equal footing.

In its full generality, this comes at a price: one has to take both notions, open and compact saturated, as primitive.

In the talk I will explain these ideas.

*Dr Marco Abbadini is a Postdoctoral Researcher at the Université Catholique de Louvain, Belgium.*

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