

## S E M I N A R



### Dr Claude Iragi University of the Western Cape

Dr Iragi has a PhD in pointfree topology, and an MSc in applied mathematics. He is an associate lecturer in the Department of Mathematics and Applied Mathematics at the University of the Western Cape.

#### Date:

Thursday, 26 September 2024

#### Time:

12h00-13h00 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:

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# Császár Orders and Related Structures in Pointfree Topology

#### ABSTRACT:

The concept of *quasi-uniformity*, first mentioned by Nachbin, in [1], was formally defined by Á. Császár in [2]. In the same book, he developed the theory of *syntopogenous* structures on a set. His intention was to provide a comprehensive framework that offers a common ground for the simultaneous study of topological, proximal, and uniform structures. Shortly thereafter, in [3], Herrlich introduced the concept of *nearness* structures providing a similar unifying theory. While all the above structures have been studied in pointfree topology, there is no clear correspondence between nearness, Császár orders, and quasi-uniformities. In this talk, we address and bridge this gap. More precisely, we define the concept of *semi-Császár structures* and show how they relate to nearnesses. Furthermore, when considering quasi-uniformities, we demonstrate that interpolative semi-Császár structures form a basis for a quasi-uniformity. Lastly, following [4] and [5], we establish a relationship between entourage quasi-uniformities and pre-uniformities within the context of frames.

#### References

- [1] L. Nachbin, Topologie sur les espaces uniformes ordonnés. *Comptes rendus hebdomadaires des seances de l'academie des sciences*, 226 (10):774-775, 1948.
- [2] A. Császár, Foundations of general topology, *Pergamon*, 1963.
- [3] H. Herrlich, A concept of nearness. *General topology and its applications*, 4(3):191-212, 1974.
- [4] P. Fletcher, W. Hunsaker, and W. Lindgren, Totally bounded frame quasi-uniformities. *Topology and its applications* 34(3):529-537, 1993.
- [5] P. Fletcher and W. Hunsaker Entourage uniformities for frames. *Monatshefte für Mathematik*, 112:271-279, 1991.

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