

Operator algebras: C^* -algebras and groupoids

Operátorové algebry a C^* -algebry příslušné grupoidům
NMMA652

Wednesdays, 13:30 — 15:00

Institute of Mathematics, Czech Academy of Sciences
Žitná 25, ground floor seminar room, back building

Course instructors: Karen Strung (strung.me) and Tristan Bice
(sites.google.com/site/tristanbice/)

This course pairs well with NMAG583: Noncommutative
Geometry and Topology Seminar (Tuesdays 16:00, Žitná 25 and
Zoom) ncgandtprague.wordpress.com/ncgt-seminar/

NMMA652

Wednesdays
13:30 to 15:00 at
IMCAS and on Zoom

For more information, please contact
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The study of C^* -algebras fits into the broader framework of operator algebras. Operator algebras were introduced by Murray and von Neumann to model noncommutative behaviour observed in **quantum physics**.

C^* -algebras lie at the intersection of **algebra, topology, and analysis**. They are an active and exciting area of research.

This course will begin with the basic theory of C^* -algebras, including the Gelfand theorem which establishes C^* -algebras as "noncommutative topological spaces", representation theory and the Gelfand–Naimark theorem, as well as other basic structural properties.

The second part of the course will focus on C^* -algebras which are constructed by **topological groupoids**—objects generalizing **groups** which can be defined in terms of **category theory**. Groupoid C^* -algebras encompass many types of C^* -algebras, including group C^* -algebras and crossed products.

We will see how the underlying groupoid informs the structure of the C^* -algebra, and vice versa.

Student evaluation will be based on a short talk on a relevant topic of their choice.