

נושאים בהכרות טופולוגיות (106344) Topics in Topological Groups (106344)

The structure theory of locally compact groups

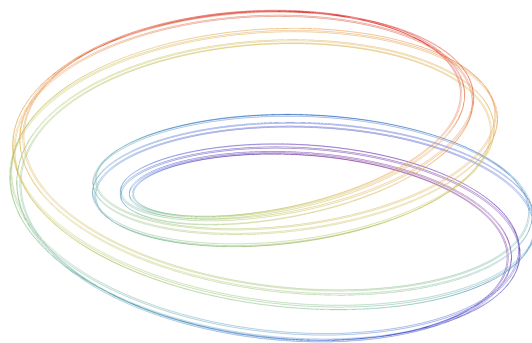
Technion - Winter 2019
Nir Lazarovich

Abstract

In the course we will study the structure theory of locally-compact second-countable topological groups.

Syllabus

1. Examples of topological groups (e.g Lie groups)
2. Local structure of groups, the Baker-Campbell-Hausdorff Formula.
3. The Haar measure
4. The Birkhoff-Kakutani Metrisation Theorem
5. Hilbert's Fifth Problem and the structure theorems of Montgomery-Zippin, Gleason-Yamabe, and Van Danzig.
6. Additional topics depending on time and preference.



The Solenoid (from Wikipedia)

Prerequisites

The course is intended for graduate and advanced undergraduate students. Familiarity with groups, topology and basic functional analysis is required (some knowledge of Measure Theory and Lie groups will be helpful).

For example, the following courses will give all the necessary background:

- Intro to groups (104172)
- Intro to metric and topological spaces (104142)
- Introduction to Functional Analysis (104276)
- Recommended: Measure Theory (106378), Lie Groups (106309), Differential Manifolds (106723).

Performance assessment

The grade will be based on participating in classes, preparing homework, and on preparing and presenting a lecture on a given related topic.

references

We will closely follow the books "Hilbert's Fifth Problem and Related Topics" by T. Tao, and "Topological Transformation Groups" by D. Montgomery and L. Zippin. Additional topics might be given from the book "New Directions in Locally Compact Groups" edited by P.-E. Caprace and N. Monod.