

Locally Compact Groups

WS 24/25

Münch

Linus Kraus

We study groups which carry nice topologies, such that multiplication and inversion are continuous. These groups play a role in geometry (Lie groups, isometry groups, automorphism groups), operator theory (C^* -algebras, harmonic analysis) and algebra (p -adic groups, Galois groups)

- Outline:
- topological groups
 - locally compact groups
 - profinite groups
 - the Haar integral
 - the Peter-Weyl Theorem
 - Pontryagin duality

Prerequisites : linear algebra, analysis, basic knowledge about groups, point- and topology (→ Gr-lagen des Analysis, Geometrie und Topologie)

Lie groups, measure theory, functional analysis ... are helpful, but not required for this course.

- Books
- Stroppel, Locally compact groups
 - Hewitt-Ross, Abstract harmonic analysis
 - Eichtoff-Dittmar, Principles of harmonic analysis
 - Kraus, book manuscript on www-pages
 - Aupiais, Dikranjan, Giordano Bruna
— Topological groups and the Pontryagin-Van Kampen Duality
 - Dugundji, Topology
 - Kelley, General Topology
 - Bourbaki, General Topology I, II.