Extending Representations of Subgroups to Groups

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(Tea 3:30 pm Math Lounge)

Abstract

Let G be a locally compact group and U a unitary representation of a closed subgroup H of G on some Hilbert space $\mathcal{H}$. When does U extend to a unitary representation of G on the same Hilbert space $\mathcal{H}$?

For normal subgroups N, Clifford answered this extension problem for finite-dimensional irreducible representations of discrete groups: there is an obstruction to extending the representation in the cohomology group $H2(G/N, \mathbb{T})$, where $\mathbb{T}$ is the circle. Mackey extended Clifford's results to irreducible representations of locally compact groups: his obstruction lies in a cohomology theory where the cochains are Borel.

I will discuss ways of tackling the extension problem for arbitrary (i.e. not necessarily irreducible) representations.

This is joint work with Steven Kaliszewski, Iain Raeburn and Dana Williams.

This talk should be accessible to graduate students.