

SIMION STOILOW INSTITUTE OF MATHEMATICS OF THE ROMANIAN ACADEMY

IMAR Monthly Lecture

On groups and their representations

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IMAR, *Miron Nicolescu* amphitheater

Abstract: We will discuss to what extent a given group is determined by its representations by linear maps on vector spaces. For a more precise formulation of this problem, we will focus on Lie groups and their representations by isometric linear operators on normed vector spaces. Simple examples show that a Lie group may not be uniquely determined by its unitary dual space, defined as the set of all equivalence classes of irreducible unitary representations on Hilbert spaces, equipped with its natural topology. Thus, there arises the question of finding a suitable enrichment of the notion of unitary dual space that should allow one to recover the Lie group under consideration. We will address that problem within the framework provided by the C^* -algebras. In this connection, we will present a few specific examples and results, as well as relations between this research area and certain problems in topology.