

Unitary representations for Lie supergroups

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Abstract

A unitary representation consists of a Lie group acting on a Hilbert space with operators that preserve the inner product. The study of unitary representations of Lie groups is a central theme in representation theory that started in the 20th century and is still at the forefront of current research.

Lie supergroups are a generalization of Lie groups inspired by supersymmetry. As such, the study of unitary representation of Lie supergroups is an important problem. However, a first major obstacle is the lack of a clear and appropriate definition of what a super unitary representation should be. Various definitions have been proposed, but none offer an adequate or entirely satisfactory solution.

In this talk, I will give an overview of the different approaches to unitary representations for Lie supergroups and discuss their advantages and disadvantages.