Regularity theorems for automorphic functionals.

Joseph Bernstein

Tel Aviv University

Abstract

This is a joint work with Andre Reznikov.

Let G be a locally compact group and X a homogeneous G-space. For simplicity assume that there exists a G-invariant measure μ on X. We are interested in the natural unitary representation $(\Pi, G, L^2(X, \mu))$ and in its subrepresentations.

Namely, let (π, G, V) be a representation of G and $\nu : V \to L^2(X)$ be a morphism of representations. Under mild assumptions on V we can assume that the image of ν lies in the space $C(X)$ of continuous functions on X. Then any point $x \in X$ defines a continuous functional $I = I_x$ on V which we call an **automorphic functional**.

We will describe a very general result which in some cases allows to give an apriory estimate of the norm of the automorphic functional I on the space V. We will illustrate how to apply this result in order to give bounds of automorphic forms in the simplest case when $G = SL(2, \mathbf{R})$.