

Theta Functions on the Kodaira–Thurston Manifold

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November 21, 2007

Abstract

In this talk, I will describe a generalization of theta functions to the Kodaira–Thurston manifold (a non-trivial torus bundle over a torus). The symplectic geometry of the Kodaira–Thurston manifold, a compact quotient of a nilpotent Lie group, is reflected in its spectral analysis. This analysis is founded on the representation theory of nilpotent Lie groups (Kirillov’s orbit method), through which I will explain a connection between the existence of Lagrangian (and special Lagrangian) foliations, in some cases torus fibrations, and the algebraic structure of the eigenspaces of the Laplacian. The constructions I will describe are motivated by “Almost Kähler Geometric Quantization”.

(joint work with A. Uribe)