SPECTRAL ANALYSIS OF COMPLEX HYPERBOLIC SPACES.

GÁBOR FRANCSICS

Our main goal is to analyze the spectrum of the automorphic Laplace-Beltrami opertor on quotients of the complex hyperbolic space. The complex hyperbolic space is a Hermitian symmetric space, its bounded realization is the unit ball in $\mathbf{C}^n$ equipped with the Bergman metric. The quotients are formed by discrete holomorphic automorhisms groups with finite volume noncompact fundamental domain. The approach is through the wave equation, using the Lax-Phillips method. Several explicit examples will be discussed, like the Picard modular groups. The necessary background will be reviewd including, fundamental domains, continuous spectrum, translation representation, relation to number theory etc.

This is joint work with P. D. Lax, New York University.