**SPEAKER**:

Peter Perry, University of Kentucky

**TITLE**:

Scattering Resonances on Hyperbolic Manifolds as a Model of Chaotic Scattering

**ABSTRACT:**

Scattering resonances represent "almost standing waves" in a scattering system which have a finite lifetime as measured by energy decay in a finite region. In this survey talk well review the basics of scattering theory on geometrically finite, real hyperbolic manifolds and their role as models of open chaotic systems. As such they have attracted the interest of both mathematicians and physicists. Work to be discussed includes the work of Patterson and Perry and papers by Borthwick, Guillope-Zworski, Guillarmou, Naud, and others.

Real hyperbolic manifolds provide a useful "laboratory" for scattering because their symmetries allow for the use of powerful methods from the theory of automorphic functions, dynamics, and the theory of Fuchsian groups. We'll discuss the connection between scattering resonances and Helberg's zeta function for a hyperbolic surface, and in turn the connection between Selberg's zeta function and the Ruelle zeta function from dynamical systems. Through this connection one can uncover close relationships between the Hausdorff dimension of the trapped set for geodesic flow on the one hand, and the distribution of scattering resonances on the other.