1108-11-565 **Djordje Milićević*** (dmilicevic@brynmawr.edu), 101 North Merion Avenue, Bryn Mawr, PA 19010. *On the sup-norm problem for eigenforms on arithmetic hyperbolic 3-manifolds (joint work with Valentin Blomer and Gergely Harcos).*

Eigenfunctions of the Laplacian are basic building blocks of harmonic analysis on Riemannian manifolds. Of critical importance in analysis, geometry, and physics is their limiting behavior, which is closely related to the geometric and (in arithmetic cases) algebro-arithmetic and functorial structure of the underlying space. For example, while high-energy eigenfunctions on negatively curved manifolds are generically expected to exhibit rather temperate intensity fluctuations, this expectation is known to fail (at special arithmetic points) for a wide class of arithmetic 3-manifolds which contain immersed hyperbolic surfaces and which can be classified in terms of their invariant trace fields and invariant quaternion algebras.

In this talk, we will discuss the state of the art of the sup-norm problem on arithmetic hyperbolic manifolds and in particular present our recent upper bound for the sup-norm of Hecke-Maass cusp forms on a family of arithmetic hyperbolic 3-manifolds of squarefree level, with a power saving over the local geometric bound simultaneously in the Laplacian eigenvalue and the volume. By a novel combination of diophantine and geometric arguments in a noncommutative setting, we obtain bounds as strong as the best corresponding results on arithmetic surfaces. (Received January 20, 2015)