1077-VJ-740 **Liyang Zhang*** (lz1@williams.edu), 3090 Paresky Center, 39 Chapin Hall Drive, Williamstown, MA 01267, and **Steven J Miller**, **Oleg Lazarev**, **Geoffrey Iyer** and **Nadine Amersi**.

Low-lying zeros of cuspidal Maass forms.

Maass forms are smooth functions on the upper half plane, are invariant under the action of $\mathrm{SL}_2(\mathbb{Z})$, are eigenfunctions of the non-Euclidean Laplacian, and are a natural generalization of the Riemann zeta function. While they arise in a variety of problems in number theory, they are significantly harder to work with then their cousins (the holomorphic cusp forms) as the averaging formula here is significantly more unwieldy. We study the distribution of zeros near the central point of L-functions of level 1 Maass forms; this is essentially summing a smooth test function whose Fourier transform is compactly supported over the scaled zeros.

Using the Petersson formula, Iwaniec, Luo and Sarnak proved that the zeros near the central point of holomorphic cusp forms agree with the eigenvalues of orthogonal matrices for suitably restricted test functions. We prove a similar result for Maass forms. We derive an explicit formula, and use the Kuznetsov trace formula to average over the family. There are numerous technical obstructions in handling the terms in the trace formula, which are surmounted through the use of smooth weight functions and results on Kloosterman sums and Bessel and hyperbolic functions. (Received September 11, 2011)