# SMALL SCALE CENTRAL LIMIT THEOREM FOR TORAL LAPLACE EIGENFUNCTIONS

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ABSTRACT: In this talk, we discuss the distribution of the $L^2$-mass of Laplace eigenfunctions on the two-dimensional flat torus in shrinking balls, where the centre of the ball is uniformly distributed on the torus. Granville and Wigman proved an upper bound for the variance of the $L^2$-mass, under a flatness condition on the eigenfunctions. We prove a central limit theorem for the $L^2$-mass at very small scales (slightly above Planck scale), for a family of flat eigenfunctions with a generic eigenvalue. This is joint work with Igor Wigman.