$$\cong$$

Speaker: A. Raghuram

Title: Why do cusp forms exist?

Abstract: I will begin this talk by reviewing the Eichler-Shimura isomorphism between the space of cusp forms of weight k and level N, and a certain cohomology group. Shimura called this cohomology group as parabolic cohomology. In the context of automorphic forms on higher groups, such a cohomology group takes the form of cuspidal cohomology. The existence of cusp forms of prescribed weight then may be reformulated into the nonvanishing of cuspidal cohomology with prescribed coefficients. I will review the relevant definitions to be able to state the nonvanishing problem for cuspidal cohomology for $GL(n)$ over a number field. After briefly surveying what's known, I will discuss some recent results obtained in joint work with Darshan Nasit making some modest progress towards this problem.