Speaker: Scott Ahlgren (Univ. of Illinois at Urbana-Champaign)

Title: Automorphic forms and the partition function

Abstract: The partition function $p(n)$ counts the number of ways to break a positive integer into parts. Its values are the coefficients of a modular form of weight $-1/2$, and this opens the door to study properties of $p(n)$ using the theory of automorphic forms. There are two branches to this study; the analytic side involves Maass forms and spectral theory and the arithmetic side involves holomorphic modular forms and Galois representations. In all cases the study can be viewed as a testing ground for more general theorems about modular forms.

I will briefly describe the history of this subject and focus on a number of results which have been proved with various collaborators in the last few years.