

November 23: Eric Rains (Caltech and MIT), “Coxeter group actions with Bruhat orders.”

In addition to the Bruhat order on a Coxeter group W itself, there are also inherited Bruhat orders on the sets W/P where P is parabolic. I’ll discuss joint work with Monica Vazirani in which we consider a more general class of “quasiparabolic” W -sets which still have a well-behaved Bruhat order. (Our motivating example was the action of S_{2n} on fixed-point-free involutions, which actually admits two different well-behaved Bruhat orders.) I’ll give the definition, some of the main properties (an analogue of strong exchange, various constructions, unexpected properties of the Poincaré series, shellability) as well as some conjectures. In particular, each such W -set also defines a corresponding representation of the Hecke algebra, and certain surprising isomorphisms suggest that there should be an analogue of Kazhdan-Lusztig theory for these representations.