DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
UNIVERSITY OF SOUTHERN DENMARK, ODENSE

Mathematics colloquium

Matthew Macauley
Clemson University

Thursday 27 November 2014, 14:15-15:00, IMADAs seminar room

Cyclic reducibility and conjugacy in Coxeter groups

Abstract:
Loosely speaking, a Coxeter group is a generalized reflection group. Reduced words give rise to natural labeled posets called heaps. Conjugating a word by an initial or terminal generator cyclically shifts it, which puts an equivalence on the underlying posets, generated by converting minimal into maximal elements. We call the resulting equivalence classes "toric posets," and they correspond to regions of graphic toric hyperplane arrangements, just as ordinary partial orders correspond to regions of graphic hyperplane arrangements. There are natural toric analogues of many standard features of ordinary partial orders, such as chains, antichains, intervals, transitivity, Hasse diagrams, extensions, total orders, morphisms, and order ideals. This leads to a notion of a toric heap, which is a labeled toric poset. Classic problems on reducibility in Coxeter groups turn into new problems on cyclic reducibility and conjugacy. This talk should be accessible to anyone who knows what a group is.

Host: Christian Reidys