

VCU Discrete Mathematics Seminar

An Introduction to Matroid Theory Through Lattice Paths

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Tuesday, March 22
12:30-1:20
4145 Harris Hall

Matroids arise from many basic mathematical objects, such as matrices, graphs, projective and affine geometries, set systems and transversals, and even lattice paths. The first part of this talk uses joint work with Anna de Mier and Marc Noy (Universitat Politècnica de Catalunya) to introduce basic concepts in matroid theory through concrete examples. We use lattice path matroids and transversal matroids to motivate matroids, illustrate the fundamental operations of minors and duality, and hint at the richness of the Tutte polynomial.

Lattice path matroids and transversal matroids form a small part of the deep and beautiful theory of matroids. Matroid theory has important applications to combinatorial optimization, arrangements of hyperplanes, coding theory, physics, and more. The second part of the talk provides glimpses of the broader field. Building on ideas in the first part, we give a bird's-eye view of some of the major research areas, such as representability over fields, well-quasi-ordering by minors, extremal matroid theory, asymptotic properties of matroids, and more.



For the DM seminar schedule, see:

<http://www.people.vcu.edu/~dcranston/DM-seminar/>