The Math Colloquium
Department of Mathematics
San José State University

Kelli Talaska

UC Berkeley

Determinants and path counting

September 14, 2011, MH320

Abstract: If we have a network with some sources and sinks (think of a collection of starting points connected to some ending points by a system of one-way roads), we can use a matrix to encode how many paths we have from each source to each sink. A classical result from algebraic combinatorics tells us that subdeterminants of such a matrix count families of paths in our network, assuming there are no directed cycles. We will explore this result and a recent theorem which tells us what happens in networks with cycles.

Background: Basic linear algebra (determinants). Exposure to multivariable polynomials would be helpful, but is not necessary.

About the speaker: Kelli Talaska received her Ph.D. from the University of Michigan and is currently an NSF Postdoctoral Fellow at UC Berkeley. Her research is in algebraic combinatorics, with applications to statistical physics, algebraic statistics, and cluster algebras.

Snacks in MH331B at 2:30 pm
Talk starts at 3 pm

For more information, see our full schedule at:

http://www.math.sjsu.edu/~hsu/colloq/