



The Math/Stats Colloquium
Department of Mathematics and Statistics
San José State University



Dominique Guillot

Stanford Univ.

**Critical exponents of graphs:
Analysis, combinatorics, and statistics**

APRIL 22, 2015, MH320

Abstract: Given a positive semidefinite matrix A and a real number a , the entrywise power of A is obtained by taking the a th power of each entry of A . Whether or not the resulting matrix must be positive semidefinite is a non-trivial problem solved in 1977 by FitzGerald and Horn. Motivated by applications in statistics, we examine when powering-up matrices having a given structure of zeros preserves positivity. I will discuss the history of the problem, present new results that characterize when entrywise powers preserve positivity, and discuss applications to high-dimensional statistics.

Joint with Apoorva Khare and Bala Rajaratnam (Stanford).

Background: One semester linear algebra and one semester analysis.

About the speaker: Dominique Guillot received his PhD in mathematics from Laval University and is currently a postdoctoral fellow at Stanford. His research interests include analysis on cones of matrices, and applications of analysis to combinatorics and statistics.

SNACKS IN MH331B AT 2:30 PM

TALKS START AT 3 PM

For more information, see our full schedule at:

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