1165-05-122 **Nima Anari**, **Kuikui Liu**, **Shayan Oveis Gharan** and **Cynthia Vinzant***
(clvinzan@ncsu.edu). *Log-concavity, matroids, and expanders.*

Matroids are combinatorial objects that model various types of independence. They appear several fields mathematics, including graph theory, combinatorial optimization, and algebraic geometry. In this talk, I will introduce the theory of matroids along with the closely related class of polynomials called strongly log-concave polynomials. Strong log-concavity is a functional property of a real multivariate polynomial that translates to useful conditions on its coefficients. Closed related classes are real stable and Lorentzian polynomials. Discrete probability distributions defined by these coefficients inherit several of these nice properties. I will discuss the beautiful real and combinatorial geometry underlying these polynomials and describe applications to random walks on the faces of simplicial complexes. (Received January 15, 2021)