Colloquium Series
Department of Mathematics and Statistics

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What happens when a probabilist falls in love with graph theory?

Abstract: A graph is a mathematical object that may be used to model and analyze complex relationships in a variety of physical and social contexts. And extremal graph theory aims to find the "largest" and "smallest" graphs that satisfy a given property. The "size" of a graph is often determined by an underlying norm, which is a function on a vector space that generalizes our intuitive notion of length. Our first goal is to introduce a family of norms induced by the complete homogeneous symmetric polynomials. These "CHS norms" carry a natural probabilistic interpretation as moments of a weighted sum of random variables, and the task of bounding these types of moments was initiated by Aleksandr Khinchin in 1923. Our second goal is to show how a specific Khinchin-type inequality for the CHS norms can be used to obtain both old and new results in extremal graph theory. Don't forget your phones!

Wednesday, Feb. 5, 1:05 – 1:50 pm in 1-309