Statistics Seminar

Department of Mathematical Sciences

DATE:	Thursday, April 30, 2020
TIME:	1:15pm – 2:15pm
LOCATION:	Zoom meeting
SPEAKER:	Yinsong Chen, Binghamton University
TITLE:	Counting and Sampling Ribbon Tilings of Rectangles

Abstract

This dissertation studies the topics of counting and sampling order-n ribbon tilings of an M-by-N rectangle. We are interested in the case when the order $n \geq 2$ is arbitrarily fixed and the size of a rectangle is much larger than n. A special rectangle for fixed width $M = n$, called a strip, is studied specially. For a strip, it is shown that the number of ribbon tilings can be obtained by solving a linear recursive system. Using this result, we provide a method for generating ribbon tilings of a strip from uniform distribution. For the growth rate of the number of ribbon tilings of strips and rectangles, we provide lower and upper bounds on the growth rate, respectively. In order to sample ribbon tilings of a rectangle, we apply Markov chain Monte Carlo method and discuss the mixing time of the defined Markov chain.