

From tiling problems to random matrices

Tom Claeys

A tiling problem consists of a two-dimensional domain together with a set of tiles. The question is to cover the domain entirely and without intersections with the available tiles. We will focus on cases where the tiles are either dominos or lozenges. We will observe some remarkable phenomena in these tiling problems as the size of the domain gets large, such as the so-called arctic circle phenomenon. We will explain how these tiling models are connected to models of non-intersecting random walks. A continuous version of the latter model consists of non-intersecting Brownian bridges, and these are in turn connected to the eigenvalues of random matrices. At the end of the talk, I will give an overview of some remarkable properties of random matrix eigenvalues.