

The Kaleidoscopic Splendour of Lattice Walk Enumeration

Marni Mishna
Simon Fraser University

This talk will examine the rich topic of lattice path enumeration. A very classic object of combinatorics, lattice walks withstand study from a variety of perspectives. Even the simple task of classifying the two dimensional walks restricted to the first quadrant has brought into play a surprising diversity of techniques from algebra to analysis to geometry. We will consider walks under a few different lenses. We will see how lattice walks arise in algebraic combinatorics and group theory, and the impact of classification. We will show that a geometric perspective can offer a visual intuition of the role of weighted steps in enumeration formulas. We will also consider some of the existing recent developments using elliptic curves to unravel where the future may lie.