



# ICECA

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## LATTICE WALK ENUMERATION: ANALYTIC, ALGEBRAIC AND GEOMETRIC ASPECTS

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This talk will survey the classification of lattice path models via their generating functions. Lattice walks withstand study from a variety of perspectives. Even the seemingly straightforward task of classifying the two dimensional nearest neighbour walks restricted to the first quadrant has brought into play a surprising diversity of techniques from algebra to analysis to geometry. We will see how geometric considerations of algebraic curves can be used to classify lattice walk generating functions into the categories of algebraic, D-finite, differentially algebraic and how those Galoisian strategies pioneered by Dreyfus, Hardouin, Roques and Singer can be exploited to build an intuitive understanding of combinatorial classes with transcendental generating functions.