

國立中央大學數學系

專題演講

主 講 人：李宜霖博士 (國立台灣師範大學數學系博士後研究員)

演講題目：Symmetric functions, tilings, and the nabla operator

演講茶會：2025年11月27日(星期四) 15:30 ~ 16:00

茶會地點：中央大學鴻經館M306

演講時間：2025年11月27日(星期四) 16:00 ~ 17:00

演講地點：中央大學鴻經館M107

Abstract：

The study of Macdonald symmetric polynomials has produced many interesting combinatorial objects. Perhaps the most famous and well-studied such objects are the q, t -Catalan numbers, which can be defined combinatorially as the sum over Dyck paths weighted by the area and dinv statistics. Numerous generalizations of the q, t -Catalan numbers have been developed, including extensions to Schrodter paths and to nested families of Dyck paths. All of these objects have natural interpretations in terms of the nabla operator ∇ on symmetric functions.

In this talk, I will introduce the algebraic and combinatorial background of the nabla operator and present its new connections with domino tilings of a certain region on the square lattice. In particular, a product formula for the q, t -generalization of domino tilings of the Aztec diamond, together with a combinatorial proof of the joint symmetry of the area and dinv statistics on the Aztec diamond, is presented. If time permits, I will also outline some proof ideas and related results on tiling enumeration. This talk does not assume any prior background.

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