



Mathematics and CS Seminar

A geometric approach to the charge statistics

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One of the most fundamental problems in representation theory is computing the dimensions of the weight spaces of the irreducible representations of groups. For reductive groups (such as $GL_n(\mathbb{C})$), many combinatorial models address this question, for example by counting the number of semistandard tableaux. The dimensions of the weight spaces of irreducible representations of reductive groups have a natural q -deformation, known as the Kostka-Foulkes polynomials. However, finding combinatorial statistics that express these polynomials remains a long-standing open problem in algebraic combinatorics, which has only been solved for type A. We develop a new approach based on the geometry of the affine Grassmannian, constructing the charge in terms of the associated crystal graph. This approach not only recovers the results of Lascoux and Schützenberger in type A geometrically but also provides a framework to find charge statistics in general.

Thursday, June 20, 2024 02:30pm - 04:00pm

Office Bldg West / Ground floor / Heinzl Seminar Room (I21.EG.101)



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