ALGEBRA SEMINAR

Introduction to group representations, III

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ABSTRACT: The remainder of this introductory mini-course on the representation theory of finite groups will focus on the symmetric groups S_n. The irreducible representations of these groups (over the complex numbers) were first worked out by Frobenius, Schur and Young at the beginning of the 20th century, but an entirely new approach was developed by Okounkov & Vershik about ten years ago.

In this lecture, I plan to state a fundamental result concerning the isomorphism of a certain pair of a priori unrelated graphs. Then I will use this fact to explain a probabilistic proof, due to Greene, Nijenhuis and Wilf (1979), of the classical "hook-length formula". Although the latter formula first arose in the context of representation theory, it can be explained in purely combinatorial terms and the probabilistic proof does not involve any representation theory either. Thus, this material can be understood even by students who missed the first two lectures in this series, and it will be of interest to those with a taste for combinatorics or probability.

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1:40 – 2:30 PM
ROOM 617, WACHMAN HALL
DEPARTMENT OF MATHEMATICS