

MATHEMATICS DEPARTMENT
North Carolina State University

SPECIAL SEMINAR

Tuesday, January 25, 2005

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Interpretations of totally nonnegative
polynomials

ABSTRACT:A matrix is called totally nonnegative (TNN) if each of its square submatrices has nonnegative determinant. First seriously studied in the 1930s, TNN matrices appeared in the areas of differential equations and rational functions. In the 1950s, Karlin and MacGregor proved a probabilistic result which gave a very interesting interpretation of all TNN matrices. This interpretation led to more applications in combinatorics, algebra, electrical engineering, and chemistry.

Recent work in physics and Lie theory has led to a generalization of the classical definitions, and in particular to the study of functions called totally nonnegative polynomials. We will consider several open questions concerning these polynomials and will present new results resembling those of Karlin and MacGregor.

4:00p.m. HA 201

Faculty and Students are invited to attend. This talk
will be accessible to advanced undergraduates.