

MATHEMATICS DEPARTMENT  
North Carolina State University

ALGEBRA SEMINAR

Thursday, October 25, 2007

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Massachusetts Institute of Technology

Increasing and decreasing subsequences

**ABSTRACT:** A subsequence  $a_{i_1}, \dots, a_{i_k}$  of a permutation  $a_1, a_2, \dots, a_n$  of  $1, 2, \dots, n$  is *increasing* if  $a_{i_1} < a_{i_2} < \dots < a_{i_k}$ . *Decreasing subsequence* is similarly defined. We will survey the subject of increasing and decreasing subsequences, focusing on what can be said about the longest increasing and longest decreasing subsequence of a permutation. Topics will include (a) relationship to Young tableaux and the famous RSK algorithm, (b) the asymptotic behavior of the length of the longest increasing subsequence (due to Baik, Deift, and Johansson), (c) connections with random matrix theory, and (d) an extension of the theory from permutations to complete matchings.

11:45 - 12:45 HA 371

Faculty and Students are invited to attend.  
Please note the different time and room.