Alternating permutations

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006 Kemeny Hall, 2:00 pm
(**Note unusual time and place**)

Abstract

A permutation $a_1, a_2, \ldots, a_n$ of $1, 2, \ldots, n$ is *alternating* if $a_1 > a_2 < a_3 > a_4 < \cdots$. The number of alternating permutations of $1, 2, \ldots, n$ is denoted E_n and satisfies

$$\sum_{n \geq 0} E_n \frac{x^n}{n!} = \sec x + \tan x.$$

After a survey of the basic properties of alternating permutations and the subject of "combinatorial trigonometry," we will discuss recent work in two areas : (a) distribution of the length of the longest alternating subsequence of a permutation of $1, 2, \ldots, n$, and (b) enumeration of various classes of alternating permutations of $1, 2, \ldots, n$ (such as those that are involutions) using techniques from symmetric functions.

This talk should be accessible to graduate students.