



## Colloquium

October 30, 3:00 p.m. (8<sup>th</sup> Period)  
(in the Atrium)

**Speaker:** Michael Coopman

**Title:** Major index distribution

### Abstract

The Plancherel measure is a probability distribution on partitions that is tied to the dimensions of the irreducible representations of the symmetric group. Alternatively, the measure can be defined as the distribution obtained by applying the Robinson-Schensted correspondence to a uniformly random permutation of fixed length. This talk will study a deformation of Plancherel measure, called  $q$ -Plancherel measure, by considering a distribution on the symmetric group known as major index distribution (Maj).

For  $0 < q < 1$ , let Maj be the distribution on the symmetric group  $S_n$  such that a permutation  $\pi$  is selected with probability proportional to  $q^{\text{maj}(\pi)}$ . We describe a new algorithm that realizes Maj and uses it to prove known results of  $q$ -Plancherel measure without the need of representation theory as well as new results about the distribution itself.