

1068-05-283

Michelle L Wachs* (wachs@math.miami.edu). *Unimodality of q -Eulerian numbers and (p, q) -Eulerian numbers.*

The Eulerian numbers enumerate permutations in the symmetric group S_n by their number of excedances or by their number of descents. It is well known that they form a symmetric and unimodal sequence of integers. In this talk, which is based on joint work with John Shareshian and Anthony Henderson, we consider the q -analog of the Eulerian numbers obtained by considering the joint distribution of the major index and the excedance number, and the (p, q) -analog of the Eulerian numbers obtained by considering the joint distribution of the major index, descent number and excedance number. We show that the q -Eulerian numbers form a symmetric and unimodal sequence of polynomials in q and the (p, q) -Eulerian numbers refined by cycle type form a symmetric and unimodal sequence of polynomials in p and q . The proofs of these results rely on the Eulerian quasisymmetric functions introduced by Shareshian and Wachs, and on symmetric and quasisymmetric function theory. (Received January 19, 2011)