

Parking Functions with a Given Descent Set

Pamela E. Harris

University of Wisconsin, Milwaukee

Based on joint work with Ari Cruz, Kimberly J. Harry, Jan Kretschmann, Matt McClinton, Alex Moon, John O. Museus, and Eric Redmon

In this talk, we present some results related to descent sets of parking functions, a superset of permutations. We present a recursive formula for the number of parking functions of length n with descents at a specified subset of $[n - 1]$, generalizing an analogous permutation result of Diaz-Lopez, Harris, Insko, Omar, and Sagan. We also establish that the number of parking functions of length n with descents at $I \subset [n - 1]$ and descents at $J = \{n - i : i \in I\}$ are equinumerous. We conclude by presenting a bijection between the set of parking functions of length n with descents at the first k indices and the set of standard Young tableaux of shape $((n - k)^2, 1^k)$, which are enumerated by $f(n, n - k - 1) = \frac{1}{n} \binom{n}{k} \binom{2n-k}{n-k-1}$.