Type B q-Stirling numbers

Joshua P. Swanson   University of Southern California

Based on joint work with Bruce Sagan

The Stirling numbers of the first and second kind are classical objects in enumerative combinatorics which count the number of permutations or set partitions with a given number of blocks or cycles, respectively. Carlitz and Gould introduced q-analogues of the Stirling numbers of the first and second kinds, which have been further studied by many authors including Gessel, Garsia, Remmel, Wilson, and others, particularly in relation to certain statistics on ordered set partitions. Separately, type B analogues of the Stirling numbers of the first and second kind arise from the study of the intersection lattice of the type B hyperplane arrangement. We combine the two directions and introduce new type B q-analogues of the Stirling numbers of the first and second kinds. We will discuss connections between these new q-analogues and generating functions identities, inversion and major index-style statistics on type B set partitions, and aspects of super coinvariant algebras which provided the original motivation for the definition. This is joint work with Bruce Sagan.