The Capelli problem for $\mathfrak{gl}(m|n)$ and the spectrum of invariant differential operators

Abstract:

The "generalized" Capelli operators form a linear basis for the ring of invariant differential operators on symmetric cones, such as $\mathsf{GL/O}$ and $\mathsf{GL/Sp}$. The Harish-Chandra images of these operators are specializations of certain polynomials defined by speaker and studied together with F. Knop. These "Knop-Sahi" polynomials are inhomogeneous polynomials characterized by simple vanishing conditions; moreover their top homogeneous components are Jack polynomials, which in turn are common generalizations of spherical polynomials on symmetric cones. In the talk I will describe joint work with Hadi Salmasian that extends these results to the setting of the symmetric super-Cones $\mathsf{GL/OSp}$ and $(\mathsf{GL} \times \mathsf{GL})/\mathsf{GL}$. 