The Capelli problem for \( \text{gl}(m|n) \) 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 \( \text{GL}/O \) and \( \text{GL}/Sp \). 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 \( \text{GL}/\text{OSp} \) and \( (\text{GL} \times \text{GL})/\text{GL} \).