NICOLLE GONZÁLEZ, University of British Columbia
Sign components of bosonic-fermionic coinvariant rings

Bosonic-fermionic coinvariant rings $R_n^{(k,\ell)}$ arise as the quotients of polynomial ring tensored an exterior algebra by the ideal of symmetric group invariants under the so-called diagonal action. These rings generalize the diagonal coinvariant rings $R_n^{(2,0)}$ studied by Garsia and Haiman in the 1990's and early 2000's, whose characters were at the core of the celebrated shuffle theorems in algebraic combinatorics. Although the rings $R_n^{(2,0)}$ satisfy some remarkable properties, many of these rely on geometric arguments not available for general $R_n^{(k,\ell)}$. In this talk, I will discuss a purely algebraic approach to computing the sign isotypic components of these rings and some algebraic and combinatorial consequences that follow from this.