

Roy, *Sylvester double sums when there are multiplicities and symmetric Hermite interpolation*

Sylvester double sums, introduced first by Sylvester are symmetric expressions of the roots of two polynomials. Sylvester's definition of double sums makes no sense in the presence of multiple roots, since the definition involves denominators that vanish when there are multiple roots. The aim of this paper is to give a new definition of Sylvester double sums making sense in the presence of multiple roots, to prove that double sums indexed by (k, ℓ) are equal up to a constant if they share the same value for $k + \ell$, as well as give the relationship between double sums and subresultants, i.e. that they are equal up to a constant. In the simple root case, proofs of these properties are already known. The more general proofs given here are using generalized Vandermonde determinants and symmetric Hermite interpolation as well as an induction on the length of the remainder sequence of P and Q .

Joint work with Aviva Szpirglas.