

THE REDUCED KRONECKER COEFFICIENTS OF THE SYMMETRIC GROUP

Mercedes Rosas, Universidad de Sevilla, Spain.

(in collaboration with Emmanuel Briand, U. de Sevilla, and Rosa Orellana,
Dartmouth College).

The understanding of the Kronecker coefficients of the symmetric group (the multiplicities of decomposition into irreducible the tensor products of two irreducible representations of the symmetric group) is a longstanding open problem. Recently, its study has appeared naturally in some seemingly unrelated areas. For instance, Matthias Christandl has showed that the problem of the nonvanishing of Kronecker coefficients is equivalent to the problem of compatibility of local spectra, and Ketan Mulmuley has set the problem of proving that the positivity of a Kronecker coefficients can be decided in polynomial time at the heart of his Geometric Complexity Theory.

In view of the difficulty of studying of the Kronecker coefficients, it is legitimate to consider some closely related, and maybe simpler objects, the reduced Kronecker coefficients, defined as limits of certain stationary sequences of Kronecker coefficients. We attempt to show that the study of the reduced Kronecker coefficients could shed light on the Kronecker coefficients.

We will introduce the reduced Kronecker coefficients, and describe some of their known properties. Then, we will describe a useful formula to compute Kronecker coefficients from the reduced ones, and, among other results, present a sharp bound for a family of Kronecker products to stabilize.