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Characters Polynomials and Kronecker Products.

Characters polynomials satisfy the property that their evaluation on the multiplicities (m_1, m_2, \dots, m_n) of an integer partition μ of n gives the value $\chi_{1^{m_1} \dots n^{m_n}}^{n-|\lambda|}$ of the irreducible character of the symmetric group S_n on the conjugacy class C_μ . These characters polynomials are closely related to the problem of decomposition of the Kronecker product of representations of S_n . They were defined by Specht in 1960 but received little attention since. In this talk, I will discuss how characters polynomials are related to the Kronecker product, how to efficiently produce them and the nature of their algebraic structure. I will also discuss their connection with a dual family of polynomials: the class polynomials. (Received February 18, 2007)