Fusion primitivity for Multiplicity-free subgroups of Symmetric groups

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1 Abstract

Suppose ψ is a representation of the group G, with irreducible decomposition

$$\psi = \sum_{i=1}^{n} m_i \psi_i$$

The representation is called multiplicity-free if each m_i is equal to 1 . If G and H are groups with $H \leq G$ such that $ind_G(1_H)$ is a multiplicity-free representation of G, then the adjacency matrices of the orbitals of G on the cosets G/H form a commutative association scheme.

An association scheme is known as fusion-primitive if its only fusions are the trivial ones. In the early 1990s, Muzychuk and Uchida proved the fusion-primitivity of the Johnson scheme $J(n,k)$ with $k \geq 7$ for all n except $2k+1 < n < 3k+1$.

In this presentation, I will talk about the techniques for checking fusion-primitivity of multiplicity-free subgroups of the symmetric group S_n.