

The representation theory of the symmetric group revisited

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Just as the Schur functions are the irreducible characters of Gl_n modules, there is a basis of the symmetric functions that evaluates to the values of the irreducible characters of the symmetric group. This is a very different perspective than the view of the Schur functions as the Frobenius image of the symmetric group characters. Instead of the combinatorics of column strict tableaux, the symmetric group characters encode the combinatorics of multi-set valued tableaux. The development of the combinatorics, symmetric functions and representation theory from this perspective has applications to three important classical problems in combinatorial representation theory: Kronecker, plethysm and the restriction problem.

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