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New Schur function series. (English) Zbl 0911.05058

From the authors’ abstract: This paper presents some new product identities for certain summations of Schur functions. These identities are generalizations of some famous identities known to Littlewood and appearing in Macdonald’s book. We refer to these identities as the “Littlewood-type formulas.” In addition, analogues for summations of characters of the other classical groups are given. The Littlewood-type formulas in this paper are separated into two classes; the rational Schur function series, and the generalized Schur function series. An application of a rational Schur function series to the infinite product representation of the elliptical theta functions is also given. We prove these Littlewood-type formulas using the Cauchy-Binet formula. The Cauchy-Binet formula is a basic but powerful tool applicable in the present context, which can be derived from our Pfaffian formula, as we explain.

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