
Schur-positivity via products of grid classes

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Abstract

Characterizing sets of permutations whose associated quasisymmetric function is symmetric and Schur-positive is a long-standing problem in algebraic combinatorics. In this paper we present a general method to construct Schur-positive sets and multisets, based on geometric grid classes and the product operation. Our approach produces many new instances of Schur-positive sets, and provides a broad framework that explains the existence of known such sets that until now were sporadic cases.

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