

Bivariate Asymptotics for Striped Plane Partitions

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Abstract

We give a new asymptotic formula for a refined enumeration of plane partitions. Specifically: colour the parts $\pi_{i,j}$ of a plane partition π according to the equivalence class of $i - j \pmod{2}$, and keep track of the sums of the 0-coloured and 1-coloured parts separately. We find, for large plane partitions, that the difference between these two sums is asymptotically Gaussian (and we compute the mean and standard deviation of the distribution). Our approach is to modify a multivariate technique of Haselgrove and Temperley.