Hou, Qing-Hu; Mansour, Toufik; Severini, Simone
Partial transposes of permutation matrices. (English) Zbl 1202.05005
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Summary: The partial transpose of a block matrix $M$ is the matrix obtained by transposing the blocks of $M$ independently. We approach the notion of the partial transpose from a combinatorial point of view. In this perspective, we solve some basic enumeration problems concerning the partial transpose of permutation matrices. More specifically, we count the number of permutation matrices which are invariant under the partial transpose and the number of permutation matrices whose partial transposes are still permutations. We solve these problems also when restricted to transposition matrices only.

MSC:
05A05 Permutations, words, matrices
15B36 Matrices of integers

Keywords:
enumeration problems; number of permutation matrices

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