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Stirling permutations for partially ordered sets

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Abstract. We generalize the notion of a Stirling permutation of the multiset $\{1, 1, 2, 2, \ldots, n, n\}$ based on the usual linear order of the integers $\{1, 2, \ldots, n\}$ to any finite partially ordered set $\mathcal{P}$, a $\mathcal{P}$-Stirling permutation. We give an algorithmic characterization of $\mathcal{P}$-Stirling permutations. A partially ordered set determines a transitive directed graph, and a further extension of Stirling permutations to directed graphs is discussed.

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