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## Pietro Caputo: Subadditivity and factorization of the relative entropy in spin systems and random permutations

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We discuss some recent developments in the analysis of subadditivity and factorization properties of the relative entropy for spin systems on arbitrary graphs, and for uniformly random permutations. For spin systems these imply optimal modified log-Sobolev inequality for arbitrary block dynamics in the uniqueness region, including the case of non-local evolutions such as the Swendsen-Wang dynamics. For random permutations, an application our bounds proves a long standing conjecture on the permanent of any matrix with nonnegative entries.

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