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Inequalities of Bonferroni-Galambos Type with Applications to the Tutte Polynomial and the Chromatic Polynomial

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Abstract: In this paper, we generalize the classical Bonferroni inequalities and their improvements by Galambos to sums of type $\sum_{I \subseteq U} (-1)^{|I|} f(I)$ where U is a finite set and $f : 2^U \rightarrow \mathbb{R}$. The result is applied to the Tutte polynomial of a matroid and the chromatic polynomial of a graph.



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