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Geometric Influences II: Correlation Inequalities and Noise Sensitivity

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(Submitted on 6 Jun 2012)

In a recent paper, we presented a new definition of influences in product spaces of continuous distributions, and showed that analogues of the most fundamental results on discrete influences, such as the KKL theorem, hold for the new definition in Gaussian space. In this paper we prove Gaussian analogues of two of the central applications of influences: Talagrand's lower bound on the correlation of increasing subsets of the discrete cube, and the Benjamini-Kalai-Schramm (BKS) noise sensitivity theorem. We then use the Gaussian results to obtain analogues of Talagrand's bound for all discrete probability spaces and to reestablish analogues of the BKS theorem for biased two-point product spaces.

Submission history

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