Graph, moments, geometry for probabilities of events in the d-space

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Probabilities of the type $P(A_{i_1} \dots A_{i_r})$ are called r-order probabilities and if only i-order probabilities are used in the calculation or bounding where $1 \leq i \leq r$, then we call it of order r. Using given r-order probabilities we can formulate various optimization problems for (conditional) probability bounding. For this paper, using binomial moments and graph theory, we investigate two special events: $A(z) = \{v \mid v \leq z\} \subset R^d$ and $B(l,u) = \{v \mid l \leq v \leq u\} \subset R^d$, the orthants (lower- or upper-bounded) and hyperrectangles (intervals), in the d-dimensional Euclidean space, respectively.

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