Tail Probability Approximations for U-Statistics

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Let U_n be a second-degree, nondegenerate, zero mean U-statistic with a bounded kernel, scaled so that $U_n/\sqrt{n} \Rightarrow N(0, \sigma^2)$. Large deviation approximations are developed for tail probabilities $P(U_n > x\sqrt{n})$ using a new explicit tilting procedure.