

Discrepancy Sets and Pseudorandom Generators for Combinatorial Rectangles

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Abstract

A common subproblem of DNF approximate counting and derandomizing RL is the discrepancy problem for combinatorial rectangles. We explicitly construct a $\text{poly}(n)$ -size sample space that approximates the volume of any combinatorial rectangle in $[n]^n$ to within $o(1)$ error (improving on the constructions of [EGLNV92]). The construction extends the techniques of [LLSZ95] for the analogous hitting set problem, most notably via discrepancy preserving reductions.