Nearly all k-SAT functions are unate.

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Abstract

We prove that $1-o(1)$ fraction of all k-SAT functions on n Boolean variables are unate (i.e., monotone after first negating some variables), for any fixed positive integer k and as n tends to infinity. This resolves a conjecture by Bollobas, Brightwell, and Leader. The proof uses among others the container method and the method of (computer-free) flag algebras. The lecture is summarizing results of a paper of Dingding Dong, Nitya Mani, and Yufei Zhao, and a follow-up paper with additional authors Bernard Lidicky; and the speaker.