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Comparing Extremal and Hysteretic Optimization on the Satisfiability Problem

BRUNO GONÇALVES, Emory University, STEFAN BOETTCHER, Emory University — We apply physically inspired optimization methods to the classical combinatorial Satisfiability problem. Treating the usual boolean variables as Ising spins and each clause as a p-spin interaction we can use the pre-existing physical intuition about spin glasses and magnetic systems to find the optimal solution for this problem (the ground state energy). We compare the performance of Extremal Optimization (\(\tau\)EO) and Hysteretic Optimization (\(HO\)) and determine the parameter values that provide the best results. Comparisons with previously published results on well known benchmarks are also made.

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\(^2\)PRL 23:5211, 2001
\(^3\)PRL 89:150201, 2002
\(^4\)DIMACS 35:393, 1997

Bruno Gonçalves
Emory University

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