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Satisfiability problems and algebras of boolean constraint system games

Properties of boolean constraint system (BCS) algebras characterize various types of perfect entangled strategies for BCS nonlocal games. These different types of perfect strategies suggest various generalized notions of satisfiability for constraint systems. We construct a constraint system which is C^* -satisfiable but not tracially satisfiable. We show that reductions between constraint systems can be captured as homomorphisms between BCS algebras, and use this point of view to streamline and strengthen several results of Atserias, Kolaitis, and Severini [AKS'19]. In particular, we show that the question of whether there is a hyperlinear group is linked to proving dichotomy theorems for \mathcal{R}^U -satisfiability of constraint systems. We also point out a number of additional open problems with other types of satisfiability.