SAT solvers and combinatorics problems

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Abstract

Solvers for the Boolean satisfiability (SAT) problem have been increasingly used to resolve problems in combinatorics. This talk will outline how SAT solvers can be used to effectively search for combinatorial objects as well as produce computer-verifiable proofs of nonexistence. Some simple examples of using a SAT solver will be presented and some noteworthy SAT-based results will be discussed—such as a recent resolution of Lam's problem which produced certificates demonstrating the nonexistence of a projective plane of order ten.