

An Algorithmic perspective on the Unique Games Conjecture

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Unique games are constraint satisfaction problems -- a generalization of Max-Cut to a larger domain size. The Unique Games Conjecture states that it is hard to distinguish between instances of unique games where almost all constraints are satisfiable and those where almost none are satisfiable. This has attracted a lot of attention since it implies hardness of approximation results for a several basic problems -- results that seem difficult to obtain by more standard complexity assumptions.

Proving or refuting this conjecture is an important goal.

In this talk, I will discuss several recent SDP based approximation results which are best possible if the Unique Games Conjecture is true, and reflect on what it will take to disprove the conjecture.