

Spectral Algorithms Capture Sum-of-Squares on Average

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It is well-known that semidefinite programs (such as the Sum-of-Squares or SoS semidefinite programming relaxation) capture spectral arguments. A recent line of work has shown that the reverse is also true for many average-case problems: spectral algorithms are just as powerful as SoS for planted clique, refuting random CSPs, spiked random tensors, and more. In this talk, I will discuss a recent result which shows the equivalence of SoS and spectral algorithms is not a coincidence, and can be shown in a black-box fashion for a broad class of average-case problems.

Based on joint work with Sam Hopkins, Pravesh Kothari, Aaron Potechin, Prasad Raghavendra and David Steurer.