

Polynomial-time Solvable #CSP Problems via Algebraic Models and Pfaffian Circuit

Susan Margulies, U.S. Naval Academy

The notion of a Pfaffian circuit arises from L. Valiant's work with "holographic algorithms" and J.Cai and V. Choudhary's subsequent lifting of "holographic algorithms" to the language of tensor products and tensor contraction networks. In this project, we introduce the notion of a Pfaffian circuit, and identify classes of 0/1 counting constraint satisfaction problems solvable in polynomial-time via algebraic techniques and interconnecting Pfaffian gates and cogates.