Tenseurs : information quantique, complexité et combinatoires quantiques

Tensors: Quantum Information, Complexity and Combinatorics

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Tensor Reconstruction Beyond Constant Rank

Computing tensor rank and an optimal decomposition of a given tensor as a sum of rank-one tensors are NP hard algorithmic problems that can be naturally cast in the language of reconstruction of subclasses of algebraic circuits. Despite being a hard problem in general, it is often possible to design efficient algorithms for interesting special cases.

This talk will discuss recent results on reconstruction of restricted classes of algebraic circuits with bounded top fan-in, which, in particular, give an efficient algorithm for computing tensor rank for tensors of small (but super-constant) rank, improving upon and extending an algorithm of Bhargava, Saraf and Volkovich for the constant rank case.

Based on a joint work with Shir Peleg and Amir Shpilka (Tel Aviv University).