Improved fewnomial upper bounds from Wronskians and dessins d'enfant

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Abstract

This talk focuses on counting solutions to a real square polynomial system $f = g = 0$, where f has three monomial terms
and g has t monomial terms.
Over the past 25 years, ongoing efforts to find a sharp upper bound on the maximal number of such solutions in the
real positive orthant have produced a variety of methods, each leading to incremental improvements.
Currently, the best-known upper bound is a cubic polynomial in t.

I will highlight some of the methods used for this fewnomial problem, and focus on the latest iteration that utilizes
a combination of Wronskians and Grothendieck's dessins d'enfant.
The talk will conclude with some generalization strategies and related open problems.

This is a joint work with Sébastien Tavenas.

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