On Some Recent Advances in Algebraic Complexity

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──── **Abstract** ────

Algebraic complexity is the field studying the intrinsic difficulty of algebraic problems in an algebraic model of computation, most notably arithmetic circuits. It is a very natural model of computation that attracted a large amount of research in the last few decades, partially due to its simplicity and elegance, but mostly because of its importance. Being a more structured model than Boolean circuits, one could hope that the fundamental problems of theoretical computer science, such as separating P from NP, deciding whether P = BPP and more, will be easier to solve for arithmetic circuits.

In this talk I will give the basic definitions, explain the main questions and how they relate to their Boolean counterparts, and discuss what I view as promising approaches to tackling the most fundamental problems in the field.