Decision versus evaluation in algebraic complexity theory
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Two main categories of problems are studied in algebraic complexity theory: evaluation problems and decision problems. A typical example of an evaluation problem is the evaluation of the permanent of a matrix. Such problems can be studied within Valiant's framework. Deciding whether a multivariate polynomial has a real root is a typical example of a decision problem. This problem is NP-complete in the Blum-Shub-Smale model of computation over the real numbers. In this talk I will present some connections between these two algebraic frameworks and between algebraic and boolean computation.