EWM-Graz 2018: Real Algebraic Geometry in Action

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" Quantifier elimination versus Hilbert 17th problem "

Abstract:

These two important problems of real algebraic geometry are intimately linked and present also very different features from an effectivity point of view. Quantifier elimination has always had an algorithmic content, and the current research concentrates on complexity issues, while the solutions to Hilbert 17th problem were not giving explicit constructions of sums of squares for decades, and recent known quantitative degree bounds coming from explicit construction methods are far from being optimal.