

Hilbert 17-th problem : classical proof and recent effectivity results

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Hilbert 17-th problem is asking whether a non negative polynomial is always a sum of squares. We discuss Artin's (1927) positive answer to this problem and discuss why this answer did not provide an effective method for constructing the sum of squares. We describe primitive recursive effective results obtained by Kreisel and his students in the fifties. Finally we explain the first elementary recursive degree bound we obtain, a tower of five exponentials. A precise bound in terms of the number and degree of the polynomials and their number of variables is provided (joint work with).

This is a joint work with Henri Lombardi and Daniel Perrucci.