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Complexité du principe de Tarski-Seidenberg. (Complexity of Tarski- Seidenberg's principle). (French)

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The authors prove the following theorem. Let ϕ be a first order formula of the language of ordered fields in prenex form with m alternations of quantifiers defined by s polynomials in n variables such that the sum of their total degrees is bounded by d. They describe an algorithm computing a quantifier free formula equivalent (in any real closed field) to ϕ with parallel complexity $n^{O(m)} \log d^{O(1)}$ and sequential complexity $n^{n^{O(m)}}$.

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Keywords : Tarski-Seidenberg principle; ordered fields; algorithm computing a quantifier free formula; real closed field; parallel complexity; sequential complexity

Classification :

∗03C10 Quantifier elimination and related topics
14G25 Global ground fields
68Q25 Analysis of algorithms and problem complexity
03C60 Model-theoretic algebra
12L12 Model theory for fields

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