

## **An improved effective Lojasiewicz inequality and its applications**

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we prove a nearly tight upper bound on the Lojasiewicz exponent for semi-algebraic functions over a real closed field  $\mathbb{R}$  in a very general setting. Unlike the previous best known bound in this setting, our bound is independent of the cardinalities of the semi-algebraic descriptions of the given functions. We exploited this fact to improve the best known error bounds for polynomial and non-linear semi-definite systems.