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On the Finiteness of Strictly $k$-regular Quadratic Forms

Abstract: An integral quadratic form is said to be strictly $k$-regular if it primitively represents all quadratic forms of $k$ variables that are primitively represented by its genus. We show that, for $k > 1$, there are finitely many inequivalent positive definite primitive integral quadratic forms of $k + 4$ variables that are strictly $k$-regular. This joint work with W.K. Chan extends a recent finiteness result of Andrew Earnest et al. (2014) on strictly regular quadratic forms of 4 variables.