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13244. *Noncoercive sums of squares in $\mathbb{R}[x_1, \dots, x_n]$.*

Positive definite forms $f \in \mathbb{R}[x_1, \dots, x_n]$ which are sums of squares of forms of $\mathbb{R}[x_1, \dots, x_n]$ are constructed to have the additional property that the members of any collection of forms whose squares sum to f must share a nontrivial complex root in \mathbb{C}^n . (Received January 12, 2009)