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Sharper Topological Bounds for Near-Circuit Exponential Sums.

Suppose \mathcal{A} is a subset of \mathbb{R}^n of cardinality $n + 3$ with non-defective (generalized) \mathcal{A} -discriminant. We show that an exponential sum g supported on \mathcal{A} has at most $O(n^2)$ connected components for its real zero set Z . (This implies an analogous bound for the positive zero sets of n -variate $(n + 3)$ -nomials.) The best previous bound (for just the number of non-compact connected components) was exponential in n . Our bound is based on a more refined look at the singularities of Z as g varies along certain monomial curves in coefficient space. (Received July 12, 2017)