

Thrifty approximations of convex bodies by polytopes

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Abstract

Given a d -dimensional convex body C containing the origin in its interior and a real $t > 1$, we seek to construct a polytope P with as few vertices as possible such that P is contained in C and C is contained in tP . I plan to present a construction which breaks some long-held records and is nearly optimal for a wide range of parameters d and t . The construction uses the maximum volume ellipsoid, the John decomposition of the identity and its recent sparsification by Batson, Spielman and Srivastava, Chebyshev polynomials, and some tensor algebra.