Projecting ℓ_∞ onto classical spaces

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We describe an explicit construction of a symmetric conical section of the n-dimensional cube onto a $(1 + \varepsilon)$-isomorphic version of the Euclidian ball of proportional dimension, or more generally onto a $(1 + \varepsilon)$-isomorphic image of an ℓ_p^m-ball, with $N = c/\sqrt{\varepsilon} \cdot m$-dependence. Allowing nonlinear projections, we may even project the full n-dimensional cube onto the same images. The construction glues together projections onto two-dimensional spaces, modifying non-symmetric constructions of Ben-Tal and Nemirowski, who reduced quadrate optimization questions to linear programming problems by approximating the circle through sections of a simplex, as noted by Klartag.