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Interior-point algorithms and Euclidean Jordan algebras

Each symmetric cone can be realized as a cone of squares in an Euclidean Jordan algebra. This enables us to develop a fairly complete theory of interior-point algorithms for optimization problems defined on the intersection of a symmetric cone and an affine subspace. The optimal (in the sense of the theory of interior-point algorithms) choice of the barrier function is $\log\det$, where det function is defined on an arbitrary Jordan algebra. The complexity estimates for major classes of interior-point algorithms are given in terms of the rank and the degree of the Euclidean Jordan algebra corresponding to a given symmetric cone.

Reference: L. Faybusovich, Euclidean Jordan algebras and Interior-point algorithms (to appear in Positivity)