

Generating Eigenvalue Bounds Using Optimization

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Dedicated to Professor George Isac

Abstract

This paper illustrates how optimization can be used to derive known and new theoretical results about perturbations of matrices and sensitivity of eigenvalues. More specifically, the Karush-Kuhn-Tucker conditions, the shadow prices, and the parametric solution of a fractional program are used to derive explicit formulae for bounds for functions of matrix eigenvalues.