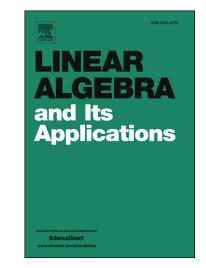
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ACCEPTED MANUSCRIPT

On an eigenvalue inequality involving the Hadamard product $\stackrel{\Leftrightarrow}{\approx}$

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Abstract

Let A, B be $n \times n$ positive definite matrices. Then for $0 \le t \le 1$

$$\prod_{i=k}^{n} \lambda_i(A \circ B) \ge \prod_{i=k}^{n} \lambda_i((A \sharp_t B)(A \sharp_{1-t} B)) \ge \prod_{i=k}^{n} \lambda_i(AB), \qquad k = 1, \dots, n.$$

This gives a weighted extension of a result of Ando [1]. The case where the eigencalues λ_i are replaced with the singular values σ_i is also considered. *Keywords:* inequality, majorization, eignevalue, singular value 2010 MSC: 15A45, 15A42

1. Introduction

1.1. Notation

Matrices considered here are $n \times n$ complex matrices. We use the following notation throughout this paper:

1. $\lambda_i(A)$ is the *i*th largest eigenvalue of A if all the eigenvalues of A are real.

 $\sigma_i(A)$ is the *i*th largest singular value of A.

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 $^{^{\}diamond}$ Dedicated to Professor Tsuyoshi Ando on the occassion of his 85th birthday.

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