

Spectral Shorted Matrices

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Abstract

Given a $n \times n$ positive semidefinite matrix A and a subspace \mathcal{S} of \mathbb{C}^n , $\Sigma(\mathcal{S}, A)$ denotes the shorted matrix of A to \mathcal{S} . We consider the notion of *spectral shorted* matrix

$$\rho(\mathcal{S}, A) = \lim_{m \rightarrow \infty} \Sigma(\mathcal{S}, A^m)^{1/m}.$$

We completely characterize this matrix in terms of \mathcal{S} and the spectrum and the eigenspaces of A . We show the relation of this notion with the spectral order of matrices and the Kolmogorov's complexity of A to a vector $\xi \in \mathbb{C}^n$.