

Existence and Uniqueness of Optimal Matrix Scalings

V. Balakrishnan and S. Boyd

SIAM Journal on Matrix Analysis and Applications, 16(1):29-39, January 1994. Shorter version appeared in *Proceedings IEEE Conference on Decision and Control*, 2:2010-2011, December 1992.

- SIAM paper: [snorm.pdf](#)
- CDC paper: [snorm_cdc.pdf](#)

We show that the set of diagonal similarity scalings that minimize the scaled singular value of a matrix is nonempty and bounded if and only if the matrix that is being scaled is irreducible. For an irreducible matrix, we derive a sufficient condition for the uniqueness of the optimal scaling.