

Intervals of structured matrices

A. Barreras, J.M. Peña¹

SUMMARY

SBD matrices are nonsingular matrices with a signed bidiagonal decomposition (cf. [1], [2]) and totally positive matrices (TP) are matrices with all minors nonnegative. SBD matrices include nonsingular TP matrices as well as their inverses. In this talk we present some results involving intervals of totally positive matrices (cf. [3], [4]) and the corresponding extension of these results to the class of SBD matrices.

Keywords: Intervals of matrices, totally positive matrices, bidiagonal decompositions.

AMS Classification: 15A45, 15B48

References

- [1] A. BARRERAS AND J.M. PEÑA. Bidiagonal decompositions, minors and applications. *Electronic Journal of Linear Algebra* **25**, 60–71, 2012.
- [2] A. BARRERAS AND J.M. PEÑA. Accurate computations of matrices with bidiagonal decomposition using methods for totally positive matrices. *Numerical linear algebra with applications* **20**, 413–424, 2013.
- [3] M. ADM AND J. GARLOFF. Intervals of totally nonnegative matrices. *Linear Algebra and Its Applications* **439**, 3796–3806, 2013.
- [4] J. GARLOFF. Criteria for Sign Regularity of Sets of Matrices. *Linear Algebra and Its Applications* **44**, 153–160, 1982.

¹Dept. Applied Mathematics/IUMA
Universidad de Zaragoza
C/Pedro Cerbuna, 12, 50009 Zaragoza
albarrer@unizar.es, jmpena@unizar.es