

Interval pseudoinverse matrices

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Abstract

One of the main problems in interval linear algebra is to decide for some given interval matrix if it is regular. An interval matrix is regular if all its selections are regular. In classic linear algebra, a natural approach in the case that a given matrix is singular is to find a pseudoinverse matrix which is in some sense very close to being the inverse matrix. The most widely used notion is the Moore-Penrose pseudoinverse matrix. This type of matrix can be generalized to interval matrices as well.

We will talk about our recent results on interval pseudoinverse matrices. We will present both theoretical and experimental results regarding different approaches to interval pseudoinverse computation and its tightness. We will compare our results with the work of Saraev [1], to our knowledge the only existing paper dealing with interval pseudoinverse so far.

Keywords

Interval analysis, interval matrix, pseudoinverse.

References

- [1] Saraev, P. V. (2013). Interval Pseudo-Inverse Matrices and Interval Greville Algorithm. *Reliable Computing*, 18, 147-156.