

Class: Strictly Copositive Matrices

Note: Since this class is symmetric, all patterns are positionally symmetric and diagrams are graphs rather than digraphs.

Status: Done

Definitions

- A matrix A is strictly copositive if and only if A is symmetric and for all vectors x such that $x \geq 0$ and $\underline{x} \neq 0$, $x^T A x > 0$.
- The partial matrix B is a partial strictly copositive matrix if and only if every fully specified principal submatrix of B is a strictly copositive matrix, and whenever b_{ij} is specified then so is b_{ji} and $b_{ji} = b_{ij}$.

Results:

- Every pattern Q has strictly copositive completion [HJR05, H05].

References:

[HJR] The Copositive Completion Problem, with Charles R. Johnson and Robert Reams, *Linear Algebra and Its Applications*, **408** (2005) 207-211.

[H9] The Copositive Completion Problem: Unspecified Diagonal, preprint.