Case 35

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Copositive matrices with this minimal zero pattern are either positive semi-definite or regular exceptional in the sense of [1]. The latter cannot be extremal, but are rather a sum of a positive semi-definite rank 1 matrix and a degenerate exceptional copositive matrix [1, Theorem 5.12]. Degenerate exceptional copositive matrices are necessarily extremal [1, Theorem 5.12], and have minimal zero pattern $\{\{1,2,4\},\{2,4,6\},\{4,6,5\},\{6,5,3\},\{5,3,1\},\{3,1,2\}\}$ [1, Theorem 8.1].

References

[1] Roland Hildebrand. Copositive matrices with circulant zero pattern. arXiv 1603.05111, 2016.