A Combinatorial core-nilpotent decomposition of unicyclic graphs

Micaela Vega

Universidad Nacional de San Luis - IMASL -CONICET, Argentina

mvega@unsl.edu.ar

A singular matrix A of rank r and order n, is similar to a 2×2 block-diagonal, where one of the block a $r \times r$ is non-singular matrix and the other block is nilpotent, see [1]. This is called a core-nilpotent decomposition of A. In this work, we show that is possible to obtain a core-nilpotent decomposition of the adjacency matrix of a unicyclic graph throughout its adjacency relations, without computing a matrix Q (whose columns form a basis of the range and null space of the adjacency matrix of U) and its inverse. This is possible through the null decomposition of unicyclic graphs, see [2].

Trabajo en conjunto con Daniel A Jaume (Universidad Nacional de San Luis), Maikon Machado Toledo (Universidad Nacional de San Luis) y Cristian Panelo (Universidad Nacional de San Luis).

Referencias

[1] Meyer, C. Matrix Analysis and Applied Linear Algebra. Society for Industrial and Applied Mathematics (2000).

[2] Allem, L. E., Jaume, D. A., Molina, G., Toledo, M. M., and Trevisan, V., Null decomposition of unicyclic graphs, Discrete Applied Mathematics,(2020) 285:594-611.