

**Gonzalo Molina**

Universidad Nacional de San Luis, Argentina

lgmolina@unsl.edu.ar

König-Egerváry graphs were introduced in [1]. They are graphs where the covering number equals the matching number. There exists a rich literature on the topic; see, for example, [2] and [3]. Graphs with (a unique) perfect matching have been extensively studied in the literature, see for example [4] and [5]. Harary in 1962, [see [6] ], and Sachs in 1964, see [7], introduced what are now known as Sachs subgraphs, which consist of subgraphs where all components are edges or cycles.

In this work, it is proved, via the notion of posy introduced by Deming in [1], that every König-Egerváry graph with a perfect matching has a spanning bipartite graph with the same set of Sachs subgraphs, and therefore the same determinant.

*Trabajo en conjunto con Daniel A. Jaume (Universidad Nacional de San Luis).*

### Referencias

- [1] Deming, R. W. (1979). Independence numbers of graphs-an extension of the König-egerváry theorem. *Discrete Mathematics*, 27(1):23–33.
- [2] Levit, V. E. and Mandrescu, E. (2011). A characterization of König–Egerváry graphs using a common property of all maximum matchings. *Electronic Notes in Discrete Mathematics*, 38:565–570.
- [3] Cardoso, D. M., Robbiano, M., and Rojo, O. (2017). Combinatorial and spectral properties of König–Egerváry graphs. *Discrete Applied Mathematics*, 217:446–454.
- [4] Simion, R. and Cao, D. S. (1989). Solution to a problem of C D Godsil regarding bipartite graphs with unique perfect matching. *Combinatorica*, 9:85–89.
- [5] Wang, X., Shang, W., and Yuan, J. (2015). On graphs with a unique perfect matching. *Graphs and Combinatorics*, 31:1765–1777.
- [6] Harary, F. (1962). The determinant of the adjacency matrix of a graph. *SIAM Review*, 4(3):202–210.
- [7] Sachs, H. (1964). Beziehungen zwischen den in einem graphen enthaltenen kreisen und seinem charakteristischen polynom. *Publicationes Mathematicae Debrecen*, 11(1-4):119–134.