# About of the determinant of graphs with a unique maximum matching.

**Diego Gabriel Martinez**
Departamento de Matemáticas, Universidad Nacional de San Luis – Instituto de Matemáticas Aplicadas de San Luis – CONICET, Argentina, Argentina
martinezdiegogabriel@gmail.com

The structure of graphs with a unique perfect matching - UPM graphs-, was studied by Kotzig in 1959 (see [1]). His mayor result was that every connected UPM graph has a bridge that belongs to the perfect matching. This result was strengthen by Wang, Shang and Yuan in 2015 via the Gallai-Edmonds Structure Theorem (see [2]). In this work we prove that if $G$ is a KE and a UPM graph, then $det(G) = (-1)^{\mu(G)}$, where $\mu(G)$ is the matching number of $G$. The FP-KE decomposition applied to UPM graph give us the following result: if $G$ is a UPM graph, then

$$\det(G) = (-1)^{\mu(\mathrm{KE}(G))} \det(\mathrm{FP}(G)).$$

Hence, if $G$ is a UPM graph, then $\det(G) = 1 \mod 2$.

*Trabajo en conjunto con Daniel A. Jaume(Departamento de Matemáticas, Universidad Nacional de San Luis – Instituto de Matemáticas Aplicadas de San Luis – CONICET, Argentina), Gonzalo Molina (Departamento de Matemáticas, Universidad Nacional de San Luis – Instituto de Matemáticas Aplicadas de San Luis – CONICET, Argentina) y Cristian Panelo (Departamento de Matemáticas, Universidad Nacional de San Luis, Argentina)..*

**Referencias**

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[2] Xiumei Wang, Weiping Shang, Jinjiang Yuan. On Graphs with Unique perfect Matching. Graphs ans Combinatorics(2015)