

# II Encuentro Matemático del Caribe

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## Extremal graphs for Estrada Indices

Tipo: Ponencia

EBER LENES \*

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### Resumen

Let  $G$  be a simple undirected connected graph. The signless Laplacian Estrada, Laplacian Estrada and Estrada indices of a graph  $G$  is the sum of the exponentials of the signless Laplacian eigenvalues, Laplacian eigenvalues and eigenvalues of  $G$ , respectively. The present work derives an upper bound for the Estrada index of a graph as a function of its chromatic number, in the family of graphs whose color classes have order not less than a fixed positive integer. The graphs for which the upper bound is tight is obtained. Additionally, an upper bound for the Estrada Index of the complement of a graph in the previous family of graphs with two color classes is given. A Nordhaus-Gaddum type inequality for the Laplacian Estrada index when  $G$  is a bipartite graph with color classes of order not less than 2, is presented. Moreover, a sharp upper bound for the Estrada index of the line graph and for the signless Laplacian index of a graph in terms of connectivity is obtained.

*Trabajo en conjunto con Enide Andrade, Exequiel Mallea-Zepeda, Jonnathan Rodríguez, María Robbiano.*

**Palabras & frases claves: Estrada index; Signless Laplacian Estrada index; Laplacian Estrada index; Chromatic number; Vertex connectivity; Edge connectivity; Line graph.**

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\*Universidad del Sinú, Cartagena, Colombia, e-mail: eber.lenes@unisinu.edu.co

## Referencias

- [1] Enide Andrade, Eber Lenes, Exequiel Mallea-Zepeda, María Robbiano, Jonathan Rodríguez Z, Extremal graphs for Estrada indices, *Linear Algebra and its Applications* 588 (2020) 54-73.