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*On the normalized Laplacian energy of a graph*

The concept of graph energy was defined by Ivan Gutman in 1978 and originates from theoretical chemistry. To determine the energy of a graph, we essentially add up the eigenvalues (in absolute value) of the adjacency matrix of a graph. Recently, a few analogous quantities of energy have been defined, including the *Laplacian energy* and *distance energy*. In this talk, we analyze the *normalized Laplacian energy* of a graph, called $\mathcal{L}$-energy, defined as

$$E_{\mathcal{L}}(G) = \sum_{i=1}^{n} |\lambda_i(\mathcal{L}) - 1|,$$

where $\lambda_1(\mathcal{L}), \ldots, \lambda_n(\mathcal{L})$ are the eigenvalues of the normalized Laplacian matrix $\mathcal{L}$ of a graph $G$. We highlight some results on the $\mathcal{L}$-energy of graphs and relate it to a known topological index called the general Randić index. We will analyze how the $\mathcal{L}$-energy relates to the standard energy and how the structure of a graph affects $\mathcal{L}$-energy.