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Square Energy: Conjectures and Results

For an n-vertex graph G with adjacency eigenvalues $\lambda_1 \geq \cdots \geq \lambda_n$, the *positive square energy* $s^+(G)$ and *negative square energy* $s^-(G)$ are defined as follows:

$$s^+(G) = \sum_{\lambda_i > 0} \lambda_i^2, \quad s^-(G) = \sum_{\lambda_i < 0} \lambda_i^2.$$

In recent years, interesting results have been proved about the square energy of graphs, exciting generalizations have been made, but many questions remain open. In this talk, the speaker will present the state of the art on these parameters. Based on joint work with several authors: Saieed Akbari, Bojan Mohar, Shivaramakrishna Pragada, and Shengtong Zhang.