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[Asymptotic behavior of Laplacian-energy-like invariant of some graphs.](#) (English)

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Summary: Let G be a connected graph of order n with Laplacian eigenvalues $\mu_1 \geq \mu_2 \geq \dots \geq \mu_n = 0$. The Laplacian-energy-like invariant (LEL for short) of G is defined as $LEL = \sum_{i=1}^{n-1} \sqrt{\mu_i}$. In this paper, we consider the asymptotic behavior of the LEL of iterated line graphs of regular graphs. In addition, the formula and asymptotic formula of the LEL of the square (resp. hexagonal, triangular) lattices with toroidal boundary condition are obtained.

MSC:

- [05C50](#) Graphs and linear algebra (matrices, eigenvalues, etc.)
- [05C90](#) Applications of graph theory
- [15A18](#) Eigenvalues, singular values, and eigenvectors
- [05C76](#) Graph operations (line graphs, products, etc.)

Keywords:

[Laplacian-energy-like invariant](#); [iterated line graph](#); [lattice](#); [Laplacian eigenvalue](#)