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The Smith normal form of the walk matrix of the Dynkin graph \( D_n \) for \( n \equiv 0 \pmod{4} \).
(English) [Zbl 07692874]
Linear Algebra Appl. 671, 121-134 (2023)

Summary: We prove that the walk matrix of the Dynkin graph \( D_n \) has the Smith normal form
\[
\text{diag} \left[ 1, 1, \ldots, 1, \frac{2}{q-1}, \frac{2}{q-1}, \ldots, 2, 0, 0 \right]
\]
when \( n \equiv 0 \pmod{4} \). This gives an affirmative answer to a question in \([W. Wang \text{ et al.}, \text{ibid.} 653, 193–206 (2022; Zbl 1497.05165)]\).

MSC: 05C50 Graphs and linear algebra (matrices, eigenvalues, etc.)

Keywords: Dynkin graph; Smith normal form; walk matrix; Chebyshev polynomial

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References:


[26] Wang, W.; Yan, Z.; Mao, L., Proof of a conjecture on the determinant of the walk matrix of rooted product with a path, Linear Multilinear Algebra (2023)

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