THE GRAPHS WHOSE PERMANENTAL POLYNOMIALS ARE SYMMETRIC

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Abstract

The permanental polynomial \( \pi(G, x) = \sum_{i=0}^{n} b_i x^{n-i} \) of a graph \( G \) is symmetric if \( b_i = b_{n-i} \) for each \( i \). In this paper, we characterize the graphs with symmetric permanental polynomials. Firstly, we introduce the rooted product \( H(K) \) of a graph \( H \) by a graph \( K \), and provide a way to compute the permanental polynomial of the rooted product \( H(K) \). Then we give a sufficient and necessary condition for the symmetric polynomial, and we prove that the permanental polynomial of a graph \( G \) is symmetric if and only if \( G \) is the rooted product of a graph by a path of length one.

Keywords: permanental polynomial, rooted product, matching.

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References


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