THE GRAPHS WHOSE PERMANENTAL POLYNOMIALS ARE SYMMETRIC

WEI LI

Department of Applied Mathematics, School of Science
Northwestern Polytechnical University
Xi’an, Shaanxi, 710129, P.R. China

e-mail: liw@nwpu.edu.cn

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.

2010 Mathematics Subject Classification: 05C31, 05C75.

References


Received 16 May 2016
Accepted 7 November 2016