INDEPENDENCE NUMBER, CONNECTIVITY AND ALL FRACTIONAL \((a, b, k)\)-CRITICAL GRAPHS

YUAN YUAN AND RONG-XIA HAO

Department of Mathematics
Beijing Jiaotong University
Beijing 100044, China

e-mail: kuailenanshi@126.com
rxhao@bjtu.edu.cn

Abstract

Let \(G\) be a graph and \(a, b\) and \(k\) be nonnegative integers with \(1 \leq a \leq b\). A graph \(G\) is defined as all fractional \((a, b, k)\)-critical if after deleting any \(k\) vertices of \(G\), the remaining graph has all fractional \([a, b]\)-factors. In this paper, we prove that if \(\kappa(G) \geq \max\left\{\frac{(b+1)^2+2k}{2}, \frac{(b+1)^2\alpha(G)+4ak}{4b}\right\}\), then \(G\) is all fractional \((a, b, k)\)-critical. If \(k = 0\), we improve the result given in [Filomat 29 (2015) 757–761]. Moreover, we show that this result is best possible in some sense.

Keywords: independence number, connectivity, fractional \([a, b]\)-factor, fractional \((a, b, k)\)-critical graph, all fractional \((a, b, k)\)-critical graph.

2010 Mathematics Subject Classification: 05C70, 05C72.

References

doi:10.1016/0166-218X(90)90126-W

doi:10.2298/FIL1504757B

doi:10.1002/jgt.20284

1Corresponding author.


Received 5 April 2017
Revised 5 July 2017
Accepted 5 July 2017