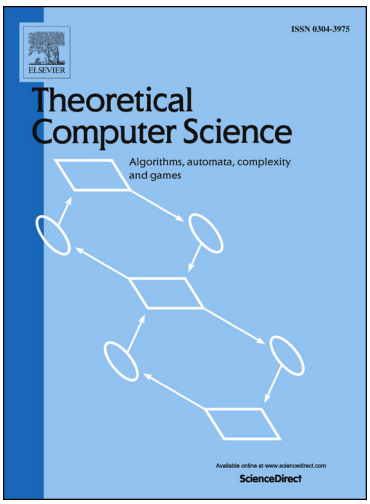
Journal Pre-proof



On the g-good-neighbor connectivity of graphs

Zhao Wang, Yaping Mao, Sun-Yuan Hsieh, Jichang Wu

PII: S0304-3975(19)30747-9
DOI: https://doi.org/10.1016/j.tcs.2019.11.021
Reference: TCS 12276

To appear in: *Theoretical Computer Science*

Received date: 25 May 2019
Revised date: 3 November 2019
Accepted date: 16 November 2019

Please cite this article as: Z. Wang et al., On the g-good-neighbor connectivity of graphs, *Theoret. Comput. Sci.* (2020), doi: https://doi.org/10.1016/j.tcs.2019.11.021.

This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

© 2020 Published by Elsevier.

Journal Pre-proof

On the g-good-neighbor connectivity of graphs *

Zhao Wang[a], Yaping Mao[b,c†], Sun-Yuan Hsieh[d], Jichang Wu[c,e]

[a]College of Science, China Jiliang University,
Hangzhou 310018, China

[b]Department of Mathematics, Qinghai Normal
University, Xining, Qinghai 810008, China

[c]Academy of Plateau Science and Sustainability,
Xining, Qinghai 810008, China.

[d]Department of Computer Science and Information Engineering,
National Cheng Kung University, Tainan 701, Taiwan

[e]School of Mathematics, Shandong University,
Jinan, Shandong 250100, China

E-mails: wangzhao@mail.bnu.edu.cn; maoyaping@ymail.com;
hsiehsy@mail.ncku.edu.tw; jichangwu@126.com

Abstract

Connectivity and diagnosability are two important parameters for the fault tolerant of an interconnection network G. In 1996, Fàbrega and Fiol proposed the g-good-neighbor connectivity of G. In this paper, we show that $1 \leq \kappa^g(G) \leq n-2g-2$ for $0 \leq g \leq \left\{\Delta(G), \left\lfloor \frac{n-3}{2} \right\rfloor\right\}$, and graphs with $\kappa^g(G) = 1, 2$ and trees with $\kappa^g(T_n) = n - t$ for $4 \leq t \leq \frac{n+2}{2}$ are characterized, respectively. In the end, we get the three extremal results for the g-good-neighbor connectivity.

Keywords: Connectivity, g-good-neighbor connectivity, extremal problem.

AMS subject classification 2010: 05C40; 05C05; 05C76.

1 Introduction

With the rapid development of VLSI technology, a multiprocessor system may contain hundreds or even thousands of nodes, and some of them may be faulty when the system is implemented. As the number of processors in a system increases, the possibility that its processors may be comefaulty also increases. Because designing such systems without defects is nearly impossible, reliability and fault tolerance are two of the most critical concerns of multiprocessor systems [38].

*Supported by the National Science Foundation of China (Nos. 11601254, 11551001, 11161037, 61763041, 11661068, and 11461054) and the Science Found of Qinghai Province (Nos. and 2014-ZJ-907) and the Qinghai Key Laboratory of Internet of Things Project (2017-ZJ-Y21).

†Corresponding author

Download English Version:

https://daneshyari.com/en/article/13431506

Download Persian Version:

https://daneshyari.com/article/13431506

Daneshyari.com