Zhai, Liyang; Xu, Liqiong; Yin, Shanshan
On the 3-extra connectivity of enhanced hypercubes. (English) Zbl 1490.68168

Summary: Reliability evaluation of interconnection networks is of significant importance to the design and maintenance of interconnection networks. The extra connectivity is an important parameter for the reliability evaluation of interconnection networks. Given a graph $G$ and a positive integer $g$, the $g$-extra connectivity, denoted by $\kappa_g(G)$, is the minimum cardinality of a set of vertices in $G$, if exists, whose deletion disconnects $G$ and leaves each remaining component with at least $(g + 1)$ vertices. In this paper, we show that the 3-extra connectivity of the $(n,k)$-enhanced hypercube is $(4n - 5)$ for $n \geq 7$ and $1 \leq k \leq n - 6$. Some previous results in [N.-W. Chang et al., IEEE Trans. Comput. 63, No. 6, 1593–1599 (2014; Zbl 1364.68050); E. Sabir et al., Theor. Comput. Sci. 799, 22–31 (2019; Zbl 1436.68052)] are extended.

MSC:

68R10 Graph theory (including graph drawing) in computer science
05C40 Connectivity
68M15 Reliability, testing and fault tolerance of networks and computer systems

Keywords:
enhanced hypercube; hypercube; $g$-extra connectivity; fault tolerance

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References:


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