The study of strongly K-edge Hamiltonian graphs and hamiltonian laceable graphs

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ABSTRACT

An interconnection network is the structure that connects the processors of parallel computer. The hypercube and star networks are the most fundamental topologies for interconnection networks. There are many researches based on these two topologies. Fault tolerance is also an important issue especially when the number of processors that in the interconnection network is large. In this thesis, we study the fault tolerance properties in hypercube and other bipartite graphs. We major in link failures. In this thesis, we introduce the Hamiltonian graphs and k-edge Hamiltonian graphs. Furthermore, we present construction schemes for strongly k-edge Hamiltonian graphs and Hamiltonian laceable graphs. We present two construction schemes for strongly k-edge Hamiltonian graphs. These two schemes are (k+2)-join and Cartesian product with K2. Applying these schemes, we can construct more new strongly k-edge Hamiltonian graphs.

Keywords : k-edge Hamiltonian, (k+2)-join, fault tolerance, strongly k-edge Hamiltonian, Cartesian product.

Table of Contents

REFERENCES

[1] C. N. Hung, X. S. Zhu, Construction for Strongly k-Hamiltonian Graphs, proceedings of the 19th Workshop on Combinatorial Mathematics and Computation Theory (2002), p. 17-22.

[2] M. Lewinter, W. Widulski, Hyper-Hamilton laceable and caterpillar-spannable product graphs, Comput. Math. Appl. 34 (1997), p. 99-104.

[3] T. K. Li, J. J. M. Tan, L. H. Hsu, Hamiltonian laceability on edge fault star graph, Parallel and Distributed Systems (2002), Proceedings. Ninth International Conference, p. 23-28.

[4] G. Simmons, Almost all n-dimensional rectangular lattices are Hamilton laceable, Congr. Numer. 21 (1978), p. 103-108.

[5] C. H. Tsai, J. J. M. Tan, T. Liang, L. H. Hsu, Fault-tolerant Hamiltonian laceability of hypercubes, Information Processing Letters 83 (2002), p. 301-306.

[6] S. Y. Hsieh, G. H. Chen, C. W. Ho, Hamiltonian – laceability of star graphs, Networks 36 (2000), p. 225-232