

The Study of Vertices Fault-Tolerance for Edge-Bipancyclicity of Hypercube

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ABSTRACT

This thesis is a discussion of nature about study of vertex fault-tolerance for multiple spanning paths in n-dimensional hypercube. We will further investigate more related vertex fault-tolerant Hamiltonian properties of more bipartite interconnection networks.

Keywords : hypercube ; edge-bipancyclic ; vertices fault-tolerance

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REFERENCES

- [1] Toru Araki, Yosuke Kikuchi, " Hamiltonian laceability of bubble-sort graphs with edge faults, " Information Sciences, vol.177, pp.2679-2691 (2007).
- [2] Y-Chuang Chen, Chang-Hsiung Tsai, Lih-Hsing Hsu, Jimmy J.M. Tan, " On some super fault-tolerant Hamiltonian graphs, " Applied Mathematics and Computation, vol.148, pp.729-741 (2004).
- [3] Rostislav Caha and Vclav Koubek, " Spanning multi-paths in hypercubes, " Discrete Mathematics, Vol. 307, Issue 16, pp.2053-2066 (2007).
- [4] Jianxi Fan, Xiaola Lin, Yi Pan, Xiaohua Jia, " Optimal fault-tolerant embedding of paths in twisted cubes, " J. Parallel Distrib. Comput., vol.67, pp.205 - 214 (2007).
- [5] J. S. Fu, " Fault-tolerant cycle embedding in the hypercube, " Parallel Computing, 29, pp.821-832, (2003).
- [6] J. S. Fu, " Longest fault-free paths in hypercubes with vertex faults, " Information Processing Letters, 176, pp. 759-771, (2006) [7] Tomas Dvorak, Petr Gregor, " Hamiltonian paths with prescribed edges in hypercubes, " Discrete Mathematics, vol.307, pp.1982 - 1998 (2007).
- [8] Petr Gregor, Tomas Dvorak, " Path partitions of hypercubes, " Information Processing Letters, vol.108, pp. 402 - 406 (2008).
- [9] Ko-Chen Hu, Chun-Nan Hung and Chia-Cheng Chen, " Edge Fault-tolerant Hamiltonian Laceability of Bipartite Hypercube-like Networks, " Proceedings of the 22nd Workshop on Combinatorial Mathematics and Computational Theory, pp.129-133 (2005).
- [10] S. Y. Hsieh, " Fault-tolerant cycle embedding in the hypercube with more both faulty vertices and faulty edges, " Parallel Computing, vol. 32, pp.84-91, (2006).
- [11] S. Y. Hsieh, " Embedding longest fault-free paths onto star graphs with more vertex faults, " Theoretical Computer Science, vol.337, pp.370-378, (2005).
- [12] Sun-Yuan Hsieh, Tzu-Hsiung Shen, " Edge-bipancyclicity of a hypercube with faulty vertices and edges, " Discrete Applied Mathematics , vol. 156, pp.1802-1808, (2008).
- [13] Chun-Nan Hung, Y. H. Chang, and C. M. Sun, " Longest paths and cycles in fault hypercubes, " Proceedings of the IASTED ICPDCN, pp.101-110, (2006).
- [14] Chun-Nan Hung and Guan-Yu Shi, " Vertex fault tolerance for multiple spanning paths in hypercube, " Proceedings of the 24th Workshop on Combinatorial Mathematics and Computational Theory, pp.241-250, (2007).
- [15] Tseng-Kuei Li, Chang-Hsiung Tsai, Jimmy J.M. Tan, and Lih-Hsing Hsu, " Bipanconnectivity and edge-fault-tolerant bipancyclicity of hypercubes, " Information Processing Letters, 87, pp.107-110, (2003).
- [16] Meijie Ma, Guizhen Liu, Xiangfeng Pan, " Path embedding in faulty hypercubes, " Applied Mathematics and Computation, (2007).
- [17] C. D. Park and K. Y. Chwa, " Hamiltonian properties on the class of hypercubelike networks, " Information Processing Letters, 91, pp.11-17, (2004).
- [18] Abhijit Sengupta, " On ring embedding in hypercubes with faulty nodes and links, " Information Processing Letters, 68, pp.207-214, (1998).
- [19] Wen-Yan Su and Chun-Nan Hung, " The longest ring embedding in faulty hypercube, " Proceedings of the 23rd Workshop on Combinatorial Mathematics and Computational Theory, pp.262-272, (2006).
- [20] Y. C. Tseng, " Embedding a ring in a hypercube with both faulty links and faulty nodes, " Information Processing Letters, 59, pp.217-222, (1996).

- [21] C. H. Tsai, J.J.M. Tan, T.Liang, and L.H. Hsu, " Fault-tolerant Hamiltonian laceability of hypercubes, " *Information Processing Letters*, 83, pp.301-306, (2002).
- [22] Chang-Hsiung Tsai, " Fault-tolerant cycles embedded in hypercubes with mixed link and node failures, " *Applied Mathematics Letters*, 21, pp.855-860, (2008).
- [23] Chang-Hsiung Tsai, " Cycles embedding in hypercubes with node failures, " *Information Processing Letters*, vol.102, pp.242-246, (2007).
- [24] Y. C. Tseng, " Embedding a ring in a hypercube with both faulty links and faulty nodes, " *Information Processing Letters*, vol.59, pp.217-222, (1996).
- [25] Aniruddha S. Vaidya, " A Class of Hypercube-like Networks, " *Parallel and Distributed Processing*, 1993. Proceedings of the Fifth IEEE Symposium, pp.800-803, (1993).
- [26] Dajin Wang, " Embedding Hamiltonian Cycles into Folded Hypercubes with Faulty Links, " *Journal of Parallel and Distributed Computing*, vol.61, pp.545-564, (2001).
- [27] Jun-Ming Xu, Zheng-Zhong Du, Min Xu, " Edge-fault-tolerant edge-bipancyclicity of hypercubes, " *Information Processing Letters*, vol.102, pp.146-150, (2005).
- [28] J.-M. Xu, M.-J. Ma, Z.-Z. Du, " Edge-fault-tolerant properties of hypercubes and folded hypercubes, " *Australasian Journal of Combinatorics*, vol.35, pp. 7-16, (2006).
- [29] Ming-Chien Yang, Tseng-Kuei Li, Jimmy J.M. Tan, Lih-Hsing Hsu, " Fault-tolerant cycle-embedding of crossed cubes, " *Information Processing Letters*, vol.88, pp.149-154 (2003).
- [30] Ming-Chien Yang, Tseng-Kuei Li, Jimmy J.M. Tan, Lih-Hsing Hsu, " On embedding cycles into faulty twisted cubes, " *Information Sciences*, vol.176, pp.676-690 (2006).
- [31] Ming-Chien Yang, Jimmy J.M. Tan, Lih-Hsing Hsu, " Highly fault-tolerant cycle embeddings of hypercubes, " *Journal of Systems Architecture*, vol.53, pp.227-232 (2007).