

超立方體通過特定邊的漢米爾頓相鄰點容錯性質之研究

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摘要

本篇論文是關於 n 維超立方體圖形通過特定邊的漢米爾頓相鄰點容錯性質之研究。

令 E_0 代表壞邊的集合， F_n 代表相鄰壞點對數的集合， E_0 是一個線性森林，其中每一個部分是一條路徑。我們將證明 E_0 存在一個漢米爾頓圖形並且通過所有的特定邊，其中 $|E_0| \leq \lfloor \frac{n-1}{2} \rfloor$ 且 $|F_n| \leq \lfloor \frac{n-1}{2} \rfloor$ 。

我們又進一步證明 E_0 存在一個漢米爾頓圖形並且通過所有的特定邊，其中 $|E_0| \leq \lfloor \frac{n-3}{2} \rfloor$ 且 $|F_n| \leq \lfloor \frac{n-3}{2} \rfloor$ 。

關鍵詞：超立方體 特定邊 相鄰壞點 容錯

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參考文獻

[1] J.A. Bondy, "Pancyclic graphs." I, J. Combin. Theory 11 (1971) 80-84.

[2] J.A. Bondy, U.S.R. Murty, "Graph Theory with Applications," North-Holland, New York, 1980.

[3] R. Caha and V. Koubek, "Hamiltonian cycles and paths with a prescribed set of edges in hypercubes and dense sets," J. Graph Theory 51 (2005) 137-169.

[4] M.Y. Chan and S.-J. Lee, "On the existence of Hamiltonian circuits in faulty hypercubes," SIAM. J. Discrete Math. 4 (1991) 511-527.

[5] X.-B. Chen, "Cycles passing through prescribed edges in a hypercube with some faulty edges," Information Processing Letters. 104 (2007) 211-215.

[6] T. Dvořák, "Hamiltonian cycles with prescribed edges in hypercubes," SIAM J. Discrete Math. 19 (2005) 135-144.

[7] T. Dvořák and P. Gregor, "Hamiltonian Fault-tolerance of Hypercubes," Electronic Notes in Discrete Math. (2007) 471-477.

[8] J.S. Fu, "Conditional Fault Hamiltonicity of the Complete Graph," Information Processing Letters, 107 (2008) 110-113.

- [9] F. Harary, "Graph Theory," Addison-Wesley, New York, 1969.
- [10] C.N. Hung, Y.H. Chang and C.M Sun, "Longest paths and cycles in faulty hypercubes," Proceeding of the IASTED ICPDCN, (2006) 101-110.
- [11] Chun-Nan Hung and Ying-Jie Lai, "The Hamiltonian cycle passing through prescribed edges in hypercubes with adjacently faulty vertices," Department of Computer Science, Information Engineering.
- [12] T.-Y. Ho, Y.-K. Shih, J.J.M. Tan and L.-H. Hsu, "Conditional fault hamiltonian connectivity of the complete graph," Information Processing Letters (2009).
- [13] S.Y. Hsieh and C.H. Chen, "Pancyclicity on Mobius cubes with maximal edge faults," Parallel Comput. 30 (2004) 407-421.
- [14] L.H. Hsu, S.C. Liu and Y.N. Yeh, "Hamiltonicity of hypercubes with constraint of required and faulty edges," J. Combin. Optimization 14 (2007) 197-204.
- [15] S.C. Hwang and G.H. Chen, "Cycles in butterfly graphs," Networks. 35 (2)(2000) 161-171.
- [16] S. Latifi, S. Q. Zheng and N. Bagherzadeh, "Optimal ring embedding in hypercubes with faulty links," in Proceedings of the IEEE Symposium on Fault-Tolerant Computing, (1992) 178-184.
- [17] C.M. Lee, J.M. Tan and L.H. Hsu, "Embedding hamiltonian paths in hypercubes with a required vertex in a fixed position," Information Processing Letters. 1107(2008) 171-176.
- [18] T.K. Li, C.H. Tsai, Jimmy J.M. Tan and L.H. Hsu, "Bipanconnectivity and edge-fault-tolerant bipancyclicity of hypercubes," Information Processing Letters 87 (2003) 107-110.
- [19] Y. Saad and M. H. Schultz, "Topological properties of hypercubes," IEEE Transactions on Computers, vol. 37, pp. 867-872, 1988.
- [20] A. Sengupta, "On ring embedding in hypercubes with faulty nodes and links," Information Processing Letters. 68 (1998) 207-214.
- [21] L.M. Shih, J.J.M. Tan and L.H. Hsu, "Edge-bipancyclicity of conditional faulty hypercubes," Information Processing Letters. 105 (2007) 20-25.
- [22] C.H. Tsai and Y.C. Lai, "Conditional edge-fault-tolerant edge-bipancyclicity of hypercubes," Inform. Sci. 177 (2007) 5590-5597.
- [23] C.H. Tsai, Jimmy J.M. Tan, T. Liang and L.H. Hsu, "Fault tolerant hamiltonian laceability of hypercubes," Information Processing Letters 83 (2002) 301-306.
- [24] W.Q. Wang and X.B. Chen, "A fault-free Hamiltonian cycle passing through prescribed edges in a hypercube with faulty edges," Information Processing Letters 107 (2008) 205-210.
- [25] J.M. Xu, Z.Z. Du and M. Xu, "Edge-fault-tolerant edge-bipancyclicity of hypercubes," Information Processing Letters. 96 (2005) 146-150.
- [26] M.C. Yang, T.K. Li, Jimmy J.M. Tan and L.H. Hsu, "Fault tolerant cycle embedding of crossed cubes," Information Processing Letters 88 (4) (2003) 149-154.