

Adjacent Vertices Fault-tolerance Hamiltonian Laceability of Hypercube

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ABSTRACT

Let Q_n be n -dimensional hypercube. In this thesis, we show that $Q_n - F$ is Hamiltonian laceable where F is the set of $f \in (n-3)$ pairs of adjacent faulty vertices and $(n-2-f)$ faulty edges. We also show that $Q_n - F$ is hyper-Hamiltonian laceable where F is the set of $f \in (n-3)$ pairs of adjacent faulty vertices and $(n-3-f)$ faulty edges. Applying these results, we can construct the fault-free path between s, t with at least $2n - 2f' + 1$ for s, t are different color and $2n - 2f'$ for s, t are the same color in $Q_n - F'$ where $2 \in |F'| = f' \in (n-2)$ and F' is the faulty vertices set contains at least a black vertex and a white vertex. And we can construct the fault-free cycle with at least $2n - 2f' + 2$ in $Q_n - F'$ where $2 \in |F'| = f' \in (n-1)$ and F' is the faulty vertices set contains at least a black vertex and a white vertex. The best result thus far is the length $2n - 2f'$.

Keywords : n -dimensional hypercube, Hamiltonian laceable, hyper-Hamiltonian laceable.

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