The star graph is a famous interconnection networks. Let $S_n = (V_0 \cup V_1, E)$ be the $n$-dimensional star graph. Let $P$ be a path and $V(P)$ be the set of vertices on $P$. Two paths $P_1$ and $P_2$ are two spanning disjoint paths of $S_n = (V_0 \cup V_1, E)$ if $V(P_1) \cap V(P_2) = \emptyset$ and $V(P_1) \cup V(P_2) = V_0 \cup V_1$. Let $F_{av}$ be the set of $F_{av}$ pairs of adjacent vertices and $F_e$ be the set of $F_e$ faulty edges of $S_n$. In this thesis, we will show that for any $s_1, s_2 \in V_0$ and $t_1, t_2 \in V_1$, there exist two spanning disjoint paths $P(s_1, t_1)$ and $P(s_2, t_2)$ of $S_n - F_{av} - F_e$ for $F_{av} + F_e \leq n-4$ and $n \geq 5$.

Keywords : star graph, spanning disjoint paths, edges fault tolerance, adjacent vertices fault tolerance

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