Fault-tolerance of the data center networks

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The k-dimensional data center network with n-port switches, denoted by $D_{k,n}$, has been proposed for data centers as a server centric network structure. The ℓ spanning trees of a graph G are said to be the completely independent spanning trees (CISTs for short) if for any two vertices $x, y \in V(G)$, the paths joining x and y on the ℓ trees have neither vertex nor edge in common, except x and y.

In this talk, some properties about $D_{k,n}$ such as vertex-pancyclicity and the existence of two completely independent spanning trees are given. Furthermore, we consider fault-tolerance and prove that $D_{k,n}$ is conditional $(2n + 2k - 9)$-edge-fault-tolerant Hamiltonian for any $k \geq 0$ and $n \geq 2$ except $k = 1$ and $n \geq 6$.