
HERMIE MONTERDE, University of Manitoba

Low fidelity quantum transmission

A quantum spin network is modelled by an undirected graph X , where the vertices and edges of X represent the qubits in the network and their interactions, respectively. The fidelity (probability) of quantum state transfer from vertex u to vertex v at time t is given by the modulus of the (u, v) entry of the unitary operator $U(t) = \exp(itH)$, where H is the Hamiltonian of the quantum system. Most studies focus on high fidelity quantum transmission between distinct vertices in a graph (such as perfect state transfer and pretty good state transfer). In this talk, we discuss low fidelity quantum transmission and provide several infinite families of graphs that exhibit such a property. This talk is based on the paper <https://arxiv.org/abs/2303.06297>.