

# Quantum Information Group

## Sharif University of Technology

**Presenter:** Abaas Poshtvan

**Title:** Bounding the quantum capacity of pauli channel

**Abstract:**

Quantum capacity determines the ultimate rate at which a sender can reliably transmit quantum information over a quantum channel to a receiver. This quantity can be described in terms of a well-known correlation measure, "coherent information" . Due to the superadditivity property of coherent information, calculating the quantum capacity becomes an infinite dimensional optimization problem which is not tractable at all. For a special type of channels called degradable channels, coherent information is additive and the problem becomes partly tractable. But not all the channels are degradable. here comes "flag extension" which is a technique to make an extended degradable channel from a non-degradable channel. The capacity of the extended channel provides an upper bound for the original channel capacity. In this presentation, we will focus on a restricted form of qubit pauli channel which has some symmetries. A flagged extension of this channel will be constructed and by calculating the flagged channel capacity, we will have an upper bound for the quantum capacity of pauli channel.

**Place:** <https://vc.sharif.edu/ch/sraeisi>

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