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# Computability in quantum channel capacities

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## Abstract

One of the most important subjects in quantum information theory is capacities of quantum channels. There are different proposals to define capacities of quantum channels which are reviewed in this talk. We will also introduce the concept of computability from computer science in quantum systems. Then, we will give a relation between computability and capacities of quantum channels on quantum systems with finite degree of freedoms.

- 1 Fabio Benatti, Samad Khabbazi Oskouei, and Ahmad Shaei Deh Abad. Gacs quantum algorithmic entropy in infinite dimensional Hilbert spaces. *Journal of Mathematical Physics*, 55:082205.
- 2 Igor Devetak (2005). "The private classical capacity and quantum capacity of a quantum channel". *IEEE Transactions on Information Theory* 51: 4455. arXiv:quant-ph/0304127