NITheCS Webinar
Thursday, 30 September 2021, 14h00

Prof Rocco Duvenhage | *University of Pretoria*

“Optimal quantum channels”

ABSTRACT

An approach to optimizing quantum channels, inspired by classical optimal transport, will be discussed. A cost is attached to each channel between two given systems, and this cost is minimized under a set of constraints consisting of tasks the channels are required to perform. Each task consists of a given input state that has to be taken to a specified output state by a channel.

Classical optimal transport can be expressed in terms of classical probability, and it will be described briefly to help clarify and motivate our approach. The cost of a quantum channel is given by an observable of the compound system consisting of the two systems between which the channels act. It will be discussed in analogy to the cost in classical optimal transport, but some key differences will also be pointed out, in particular in relation to the role of entanglement.

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