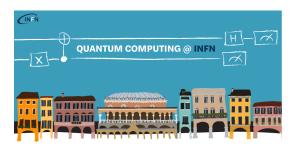Contribution ID: **12**   Type: **not specified**

How to Measure Reflection and Transmission Amplitudes in a Digital Quantum Simulation

Thursday, 31 October 2024 11:20 (20 minutes)

In recent years, much research has investigated the potentialities of quantum computers, ranging from physical implementations to comparisons with well-known algorithms of classical computation.

I would like to present a quantum algorithm to measure quantities related to scattering theory: reflection and transmission amplitudes of a quantum particle interacting with a short-ranged potential.

The main feature of the protocol is the coupling between the particle and an ancillary spin-1/2 degree of freedom. This allows us to reconstruct tomographically the scattering amplitudes, which are in general complex numbers, from the readout of one qubit.

The presentation is based on a recent paper [arXiv:2407.01669].

Sessione

Simulazione

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