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Grover-Diffusion operator unicity for the Grover quantum-search algorithm

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The repetition of Grover-diffusion operator the order of √N times is the essence of the Grover quantum selection algorithm. We explore what other operators could be devised in its place and show that they either diverge or vanish in the Grover iteration, thus making the known Grover-diffusion the only possible operator. We present a C++ SU(2) model of the Grover-diffusion operator implemented using our SU2 package.

Primary author: DIMA, Mihai-Tiberiu (JINR - MLIT)

Co-authors: DIMA, Maria (JINR - MLIT); Ms MIHAILESCU, Madalina

Presenter: DIMA, Mihai-Tiberiu (JINR - MLIT)