Abstract:
Supermaps are higher-order transformations that take maps as input. We explore quantum algorithms that implement supermaps of unitary operations using either multiple or divisible calls to a black-box unitary operation. Specifically, we present algorithms for qubit-unitary inversion in the former scenario and for transforming Hamiltonian dynamics in the latter. These algorithms for transforming Hamiltonian dynamics exemplify quantum functional programming, where the desired function is defined as higher-order quantum computation, involving a concatenation of higher-order quantum transformations.

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Bio:
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