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Title:	Simulating open quantum dynamics on an NMR quantum processor using the Sz.-Nagy dilation algorithm
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Abstract:	We experimentally implement the Sz.-Nagy dilation algorithm to simulate open quantum dynamics on a nuclear magnetic resonance quantum processor. The Sz.-Nagy algorithm enables the simulation of the dynamics of an n -qubit system using n + 1 qubits. We experimentally simulate the action of three nonunitary processes, namely, a phase damping channel acting independently on two qubits, a two-qubit correlated amplitude damping channel, and a magnetic-field-gradient pulse acting on an ensemble of two coupled nuclear spin- 1 2 particles. To evaluate the quality of the experimentally simulated quantum process, we perform convex-optimization-based full quantum process tomography to reconstruct the quantum process from the experimental data and compare it with the target quantum process to be simulated.
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