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Optimization of Objective Function Estimation for Gate-Model Quantum Computers[1] LASZLO GYONGYOSI, University of Southampton, Budapest Univ. of Tech., SANDOR IMRE, Budapest Univ. of Tech. — Quantum computers exploit the fundamentals of quantum mechanics to solve computational problems more efficiently than traditional computers. Gate-model quantum computers provide a flexible framework to realize quantum computers in experiments. The maximization of the objective function of computational problems is a remarkable application scenario of experimental gate-model quantum computers. The objective function estimation of the quantum computer is a high-cost procedure that requires several rounds of quantum state preparations, quantum computational steps, and quantum state measurements. Here, we define a framework for objective function estimation and maximization in gate-model quantum computers. The method significantly reduces the costs of the objective function estimation and provides an estimate of the new state of the quantum computer. The results are particularly convenient for the performance optimization of experimental gate-model quantum computations.

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