Evaluation of |*Y*> Magic State Distillation Circuit

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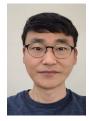
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Abstract— **For a universal quantum computer, surface code-protected logical Clifford and non-Clifford gates must be supported fault-tolerantly. However, to implement non-Clifford gates, magic states are required, and since these magic states are faulty, distillation circuits are used to obtain high-fidelity magic states by utilizing multiple low-fidelity states. It is not easy to implement and simulate the operations of a distillation circuit because it requires many resources. This paper presents a resource-efficient implementation and evaluation of a |*Y*> magic state distillation circuit on a quantum simulator.**

Keyword— **fault-tolerant quantum computing, surface code, lattice surgery, magic state distillation**

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