The 38th International Symposium on Lattice Field Theory

LATTICE 21

JULY 26-30 2021, ZOOM/GATHER@MIT

Contribution ID: **267** Type: **Oral presentation**

Benchmarking the performance of readout error mitigation through classical bit-flip correction on IBM and Rigetti devices

Thursday, 29 July 2021 07:45 (15 minutes)

Readout errors are among the most dominant sources of error on current noisy intermediate-scale quantum devices. Recently an efficient, scaleable method for mitigating such errors has been developed. Here, we benchmark this correction protocol on IBM's and Rigetti's quantum devices. Measuring observables in the computational basis, we demonstrate how the mitigation procedure improves the results with only modest overhead cost. In particular, we examine the variances of the noisy original and the mitigated data. Our hardware results show good agreement with the theoretical prediction and that the increase in variance due to the mitigation procedure is only moderate.

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Session Classification: Algorithms (including Machine Learning, Quantum Computing, Tensor Networks)

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