Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

Characterizing the Coherence of Trapped Ion Qubits in the Software-Tailored Architecture for Quantum co-design (STAQ) Hardware[1] JACOB WHITLOW, JUNKI KIM, MARK KUZYK, STEPHEN CRAIN, Duke University Department of Electrical and Computer Engineering, TIANYI CHEN, Duke University Department of Physics, BRAD BONDURANT, SAMUEL PHIRI, KEN BROWN, JUNGSANG KIM, Duke University Department of Electrical and Computer Engineering — The goal of STAQ is to build a vertical stack for quantum computing composed of applications, software, and hardware integrated together. Our team focuses on the hardware implementation, which consists of building a trapped ion quantum computer large enough to perform calculations of practical use. The system itself utilizes a Sandia high-optical access trap placed in a mechanically stable cryostat. This presentation will provide updates on the quality of our ^{171}Yb+ qubits, including the T2 coherence time.

[1]NSF

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Date submitted: 31 Jan 2020 Electronic form version 1.4