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A Trapped Ion Computing Platform with Software-Tailored Architecture for Quantum co-design

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A full-stack approach to quantum computing requires collaborative design and integration between layers, from the algorithms and programming language to the qubit-specific hardware. The Software-Tailored Architecture for Quantum co-design (STAQ) team focuses on demonstrating quantum advantage on an ion trap platform developed at Duke University. This poster will discuss recent progress and results regarding the project's goals of realizing a 32-qubit quantum computer with all-to-all connectivity and a fully integrated vertical stack, using the system in-house to address computer engineering and software challenges, and making the system accessible to collaborators through an easily programmable software interface.

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