

Abstract Submitted
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Linear Ion Chains in Silicon Surface-Electrode Traps S. CHARLES DORET, JASON AMINI, KEN WRIGHT, ARKADAS OZAKIN, CURTIS VOLIN, ALEXA HARTER, RICHART SLUSHER, Georgia Tech Research Institute — Long chains of equally spaced ions provide an environment for quantum information processing that may be extendable to large- scale quantum information processing and quantum simulation. Such chains may be stably held in tailored anharmonic potentials, a task for which linear surface-electrode traps with many DC electrodes are ideally suited. Here we report progress towards experiments with chains of $^{40}\text{Ca}^+$ and $^{44}\text{Ca}^+$, such as splitting and merging of sub-chains, deterministic loading of particular ion- isotope sequences, and measurements of heating and thermalization of ion chains of various lengths.

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