Abstract Submitted
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Operation of a planar-electrode ion trap array with adjustable RF electrodes[1] MUIR KUMPH, PHILIP HOLZ, KIRSTEN LANGER, MICHAEL NIEDERMAYR, KIRILL LAKHMANSKIY, MICHAEL BROWNNUTT, RAINER BLATT, Institut für Experimentalphysik — One path to scaling-up trapped atomic ions for large-scale quantum computing and simulation is to create a two-dimensional array of ion traps in close proximity to each other. A method to control the interactions between nearest neighboring ions is demonstrated and characterized here using an adjustable radio-frequency (RF) electrode between trapping sites. A printed circuit board planar-electrode ion trap is demonstrated, trapping laser-cooled $^{40}Ca^{+}$ ions. RF shuttling and secular-frequency adjustment are shown as a function of the power applied to the addressed RF electrode. The trapped ion's heating rate is measured via a fluorescence recooling method.

[1]European Research Council, Project CRYTERION

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