

Designing Robust RF Junctions for Register-Based Trapped-Ion Quantum Processors

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Radiofrequency (RF) junctions enable two-dimensional structures within the QCCD architecture and are thus essential for scaling trapped-ion quantum processors. We discuss the design and optimization of RF junctions, highlighting implications for efficient through-junction ion transport. Further, we present an optimized RF junction in a surface-electrode trap and analyze its robustness concerning typical errors of the multilayer microfabrication process.

Author: UNGERECHTS, Florian

Co-authors: MUNOZ CARPIO, Rodrigo (Leibniz Universität Hannover); BÄTGE, Janina (Leibniz Universität Hannover); HOFFMANN, Axel (Leibniz Universität Hannover); MEINERS, Teresa (Leibniz Universität Hannover); KAUNE, Brigitte (Leibniz Universität Hannover); OSPELKAUS, Christian (Leibniz Universität Hannover (DE))

Presenter: UNGERECHTS, Florian

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