

Miniature Linear RF Ion Trap for Quantum Computing

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A string of laser cooled ions is an attractive system for quantum logic and quantum state control. Towards that end, we have developed a miniature, linear rf ion trap with characteristic dimensions of 200 microns. This trap permits strong confinement for efficient sideband cooling. Confinement along the string axis is provided by static fields, eliminating micromotion in this direction. The design of the trap and its construction will be discussed. Recent data on heating and single ion state detection efficiency will be presented.