

Abstract Submitted  
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**Quantum Information with 2-D Ion-Trap Arrays** ANDREW WILSON, KATHERINE MCCORMICK, SUSANNA TODARO, DANIEL SLICHTER, JONAS KELLER, DIETRICH LEIBFRIED, DAVID WINELAND, National Institute of Standards & Technology — Laboratory efforts on trapped-ion quantum information are currently focused on two distinct trap architectures – segmented linear traps and 2D trap arrays. In 2D-ion-trap-arrays, each ion is located in its own individually-controllable trapping well, so that interactions between selected ions can be tuned and different array patterns can be fabricated. These features are likely to be useful for a variety of applications in both quantum simulation and computing. Recently we demonstrated quantum entanglement between two ions in separate trapping wells, and now we are working to extend to larger numbers of ions in micro-fabricated surface-electrode traps beginning with confinement in triangular geometries. This talk is an update on progress.

Andrew Wilson  
National Institute of Standards & Technology

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