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### **Quantum Networking of Trapped Ions<sup>1</sup>**

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Entangling large numbers of trapped ions for quantum computing applications will require networks of cold ions trapped in multi-zone microfabricated traps, coupled either through a mutual interaction with their Coulomb-coupled motion or through a common interaction with individual photons. Progress on these fronts at Michigan will be reviewed, including the deterministic entanglement of pairs of Cd ions in a single trap, the shuttling of ions through a 49-electrode 10-zone trap, the fabrication of micron-scale ion traps, and progress in the probabilistic (but scalable) entanglement of two remotely-located ions.

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