



Contribution ID: 53

Type: **Poster**

## Advanced technologies for ion trap systems

*Monday, 25 September 2023 19:30 (2 hours)*

Trapped ion systems will require large complex ion trap geometries with fast shuttling between zones and integrated photonics to address the large number of ions in the system. Here, we highlight our recent efforts on all three fronts. We discuss our optimization efforts to shuttle ions at high speeds with low excitation in our recently fabricated multi-junction ion trap. Furthermore, we detail recent results utilizing photonic optical modulators to manipulate the quantum state of an ion.

SNL is managed and operated by NTESS under DOE NNSA contract DE-NA0003525

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**Session Classification:** Monday Poster