

Abstract Submitted
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Fabrication of Direct Bonded Copper Atom Chips for Harmonic Traps MATTHEW SQUIRES, Air Force Research Laboratory, BRIAN KASCH, Space Dynamics Laboratory, JONATHAN CROW, SPENCER OLSON, Air Force Research Laboratory — Atom chips using direct bonded copper (DBC) have greater power handling than typical lithographically produced atom chips because pure, thick (>100 microns) copper layers are commonly obtained with DBC. We present our current fabrication techniques for DBC atom chips including: laser etching, acid etching, multi-layered chips, etc. The optimized parameters for each of these processes will be presented. Specifically, we will present the fabrication process used in the creation of a tunable harmonic trap. We will also present the design and fabrication of a chip for generating a quadrupole magnetic field for the magneto-optical trap (MOT) chip. The MOT chip is co-aligned with the harmonic trap chip to simplify transfer and optimization.

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