

Abstract Submitted  
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**Rapid prototyping of versatile atom chips for atom interferometry applications.** BRIAN KASCH, MATTHEW SQUIRES, SPENCER OLSON, BETHANY KROESE, Air Force Research Laboratory, ERIC IMHOF, RUDOLPH KOHN, BENJAMIN STUHL, STACY SCHRAMM, JAMES STICKNEY, Space Dynamics Laboratory — We present recent advances in the manipulation of ultra-cold atoms with ex-vacuo atom chips (i.e. atom chips that are not inside the UHV chamber). Details will be presented of an experimental system that allows direct bonded copper (DBC) atom chips to be removed and replaced in minutes, requiring minimal re-optimization of parameters. This system has been used to create Bose-Einstein condensates, as well as magnetic waveguides with precisely tunable axial parameters, allowing double wells, pure harmonic confinement, and modified harmonic traps. We investigate the effects of higher order magnetic field contributions to the waveguide, and the implications for confined atom interferometry.

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