

Abstract Submitted
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Ex Vacuo Atom Chips SPENCER OLSON, Air Force Research Laboratory, BRIAN KASCH, Space Dynamics Laboratory, MATTHEW SQUIRES, Air Force Research Laboratory — Tight magnetic confinement of cold atoms is routinely achieved at sub-mm distances from the surface of an atom chip. This has led to the widespread integration of atom chips into UHV chambers so as to achieve the smallest possible atom-surface separations. We present an alternative approach in which the atom chip resides completely outside the vacuum, separated from the atoms by a thin crystalline membrane. Since replacing the atom chip does not require breaking vacuum, the swap-out time is reduced from days to minutes. This setup allows rapid prototyping of atom chip designs. We demonstrate Bose-Einstein condensation of a ^{87}Rb cloud in this setup.

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