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Improvements on direct-bonded copper, atom chips used for Cold-Atom Atomic Interferometry. JOHNATHAN WHITE, JAMES STICKNEY, RUDY KOHN, Space Dynamics Laboratory, BRIAN KASCH, STACY SCHRAMM, SPENCER OLSON, MATTHEW SQUIRES, Air Force Research Laboratory — The Air Force Research Laboratory (AFRL) has been developing atom chips for use with cold-atom sensing and atom interferometry. We detail numerous advances in processing and fabrication techniques. Design improvements support tighter traps and rapid prototyping. Development of vias allow atom chips to serve as vacuum-chamber walls, decreasing current demands. Fabrication innovations that improve planarization support the integration of micro-features on single chips and chip-based assemblies.

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