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Microfabrication and assembly of an integrated cavity QED and atom chip experiment DANIEL BROOKS, TOM PURDY, DAN STAMPER-KURN, UC Berkeley — We have combined high-finesse optical resonators with an atom chip to study quantum atom optical systems. Fabry-Perot cavities in the single-atom strong coupling regime are aligned through micromachined holes in thinned silicon substrates that also house the microfabricated circuitry for magnetic trapping and transport of cold atoms. These high current capacity wires will allow for atoms to be confined well within a single anti-node of the cavity mode. A reproducible etch process of selectively removing some of the dieletric layers of the cavity mirrors' coatings was found to enhance transmission without adding scattering losses. The combined chip and cavities are actively temperature stabilized at the end of a two stage vibration-isolation mount inside an UHV chamber.

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