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**Observation of on-chip, atom interferometric phase coherence with 710 $\mu$m and 200 ms packet separation**[1] QUENTIN DIOT, STEPHEN R. SEGAL, ERIC A. CORNELL, JILA, NIST, and University of Colorado, ALEX A. ZOZULYA, Worcester Polytechnic Institute, DANA Z. ANDERSON, JILA, NIST, and University of Colorado — We report on an atom chip Bose-Einstein condensate interferometer with long arm length and coherence time. In our experiment, a standing wave of light splits a condensate into two packets that counter-propagate in a waveguide potential with weak axial confinement. We vary the relative phase of the packets by applying a magnetic field gradient during propagation. We apply the splitting light a second time after the packets have propagated for one axial trap period in order to read out the relative phase. The packets are separated for a total of 200 ms and achieve a maximum spatial separation of 710 $\mu$m; these parameters compare favorably with those of similar experiments. To extract the phase shift due to the applied magnetic field, we must carefully control apparatus vibrations. We compare the noise in our results to the expected contribution from quantum phase diffusion.

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