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Interference of Bose-Einstein Condensates on an Atom Chip G.-B. JO, Y. SHIN, C. SANNER, T.A. PASQUINI, M. SABA, S. WILL, W. KETTERLE, D.E. PRITCHARD, MIT, M. VENGALATTORE, M. PRENTISS, Harvard — We have used a microfabricated atom chip to split a single Bose-Einstein condensate of sodium atoms into two spatially separated condensates [1]. Dynamical splitting was achieved by deforming the trap along the tightly confining direction into a purely magnetic double-well potential. We observed the matter wave interference pattern formed upon releasing the condensates from the microtraps. The intrinsic feature of the quartic potential at the merge point, such as zero trap frequency and extremely high field-sensitivity, caused random variations of the relative phase between the two split condensates. Recent experimental progress will be discussed. [1] Y. Shin, et.al., Phys. Rev. A **72**, 021604 (2005)

Prefer Oral Session
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