

Abstract Submitted  
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**Phase Shift of a Weak Coherent Beam by a Single Atom** SYED ABDULLAH ALJUNID, MENG KHOON TEY, BRENDA CHNG, JIANWEI LEE, GLEB MASLENNIKOV, CHRISTIAN KURTSIEFER, National University of Singapore — We report the direct measurement of a phase shift induced by single  $^{87}\text{Rb}$  atom on a focused coherent light field. The atom is localized in an optical tweezer between two confocal aspheric lenses in one arm of a balanced Mach-Zehnder interferometer. In this arrangement, the light beam passes only once through the atom localization volume. We observe a maximum phase shift of  $1^\circ$  for near-resonant light passing through the interferometer.

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