

Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

Dual Species Matter Qubit Entangled with Light S.-Y. LAN, S.D. JENKINS, T. CHANELIERE, D.N. MATSUKEVICH, C.J. CAMPBELL, R. ZHAO, T.A.B. KENNEDY, A. KUZMICH, Georgia Institute of Technology — We propose and demonstrate an atomic qubit based on a cold ^{85}Rb - ^{87}Rb isotopic mixture, entangled with a frequency-encoded optical qubit. The interface of an atomic qubit with a single spatial light mode, and the ability to independently address the two atomic qubit states, should provide the basic element of an interferometrically robust quantum network.

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Date submitted: 29 Jan 2007

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