

Abstract Submitted  
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**A Bose-Einstein Condensate Level** SATYAN BHONGALE, University of New Mexico, EDDY TIMMERMANS, Los Alamos National Laboratory — We consider a trapped, phase separated two-component or two-species Bose-Einstein condensate (BEC) system: a large BEC of bosonic atoms of type ‘a’ in which a smaller bubble of a BEC of ‘b’ atoms is immersed. If the trapping force of BEC a is tuned near the value at which it nearly cancels the buoyancy force experienced by the immersed BEC- b fluid, the equilibrium center-of mass position of the BEC- b bubble becomes highly sensitive to any force difference experienced by the a and b atoms. Imaging the position of the BEC-b bubble than gives a sensitive measure of the external force. If the cancellation is nearly complete, the equilibrium position of the nearly freely floating BEC-b bubble can be used to study the Casimir-like forces generated by the quantum fluctuations of the finite size BEC-system.

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