

Abstract Submitted  
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**Feedback-Enhanced Dual Optical Trap System for the Measurement of Force Applied By Contracting or Expanding Materials** JOSEPH CRAIGLE, Appalachian State Univ, TYLER FOLEY, BROOKE HESTER, Appalachian State University — We have developed a technique to expand the force measurement capabilities of a dual optical trap system by implementing feedback enhancement. Using the calibrated voltage data obtained from a position sensing photodiode, it is possible to track particle displacements of only a few nanometers. By making small adjustments to the beam waist location and to the beam power based on the instantaneous displacement of the trapped bead, the trap more effectively confines the sample at the equilibrium position. The benefit is twofold in that it effectively increases the trap stiffness to counteract applied forces, and also increases the maximum measurable force particle-trap system for each trap. Using this technique, it is possible to make more precise measurements of the contracting or expanding force of a material which is covalently attached on either end to micron-sized dielectric beads.

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