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Buckling transition in an optomechanical system HAITAN XU, JQI, University of Maryland-College Park; NIST, UTKU KEMIKTARAK, University of Maryland-College Park; NIST, JOHN LAWALL, NIST, JACOB TAYLOR, JQI, University of Maryland-College Park; NIST — We analytically study and experimentally realize the buckling transition in an optomechanical system with a membrane in the middle of a Fabry-Perot cavity. Pumping the system lasers couples the optical and mechanical modes, which changes the effective potential of the membrane. Specifically, we find that a harmonic potential, at low power, develops into a double-well potential with increasing optical power, leading to a buckling transition for the membrane-in-the-middle system.

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