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**Nonlinear dynamics of micro-opto-mechanical cavities** FLORIAN MARQUARDT, JACK HARRIS, STEVEN M. GIRVIN, Departments of Physics and Applied Physics, Yale University, PO BOX 208284, New Haven, CT 06520, USA — We present a detailed theoretical analysis of the nonlinear dynamics of a cantilever moving under the influence of radiation pressure, as it carries one of the mirrors of a Fabry-Perot cavity. We will discuss the existence and the properties of multiple stable dynamical attractors, the influence of noise, the possibility of tailoring the effective potential via multi-color laser input, and the effects of the dynamics on the output light. We will comment on the relevance of this analysis for existing and planned implementations of micro-opto-mechanical cavities.

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