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**Investigation of stability for an electrostatically actuated flexible electrode** CORY HINTON, MATTHEW MCFARLAND, THOMAS WARD, North Carolina State University — An argument for employing dimensional analysis to explore stability in an electrostatically actuated flexible electrode is presented theoretically and experimentally. The electrode is configured as a cantilever beam, as many applications in MEMs, medical devices, and sensing devices have been studied for years. This study investigates a macro scale beam (length = 100mm - 150mm), for applications in cooling fan and flapping micro air vehicle devices. The influence of scale is validated, voltage potential and frequency contributions are quantitatively measured, and a comparison of input signal (analog versus digital) is discussed using dynamical systems analysis. Based on experimental data and numerical models, characteristics of stability are presented that could influence design considerations for various micro- and macro-scale devices.

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