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Characterization of a MEMS Actuator through Simulation[1] ERIK GARCELL, MIGUEL GONZALEZ, BYOUNG HEE MOON, PRADEEP BHUPATHI, PAN ZHENG, GEORGE LING, YOONSEOK LEE, Department of Physics, University of Florida, Gainesville, FL 32611, HO BUN CHAN, Department of Physics, The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong — Simulations of a laterally shifting micro-electro-mechanical-system (MEMS) were performed to characterize the device for use in liquid ^{3}He experimentation. Using the multiphysics software COMSOL, we were able to identify the relevant electrostatic and mechanical properties of our device, as well as its various vibrational modes. When actuated with a DC voltage, simulations demonstrated comparatively large out-of-plane displacements, which are in agreement with optical measurements taken from the actual device. New simulations were performed to test the effectiveness of possible efforts to dampen this displacement. Using the data collected from these simulations, future generations of the MEMS will be designed and improved for use in liquid ^{3}He experiments.

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