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Characterization of MEMS Devices for the Study of Superfluid Helium Films¹ MIGUEL GONZALEZ, BYOUNG HEE MOON, PRADEEP BHUPATHI, PAN ZHENG, GEORGE LING, ERIK GARCELL, Department of Physics, University of Florida, Gainesville, FL 32611, USA, HO BUN CHAN, Department of Physics, The Hong Kong University of Science and Technology, Hong Kong, China, YOONSEOK LEE, Department of Physics, University of Florida, Gainesville, FL 32611, USA — Measurements on the mechanical attributes of MEMS resonators were performed at room and low temperatures. Specially devised resonators which can be actuated for shear motion were designed and fabricated using a state-of-the-art multi-user MEMS process. The devices consist of a pair of parallel plates with a well-defined gap whose size can be controlled with high accuracy down to the sub-micron range. A full study of resonance properties at various pressures was performed at room temperature. Details of design, fabrication, and operation will be presented along with results from a preliminary study of a resonator immersed in liquid ^4He . The devices show potential for use in low temperature experiments and to investigate novel phenomena in quantum fluids at the micro/nano scale such as superfluid ^3He films.

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