

Abstract Submitted
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Probing Quantum Turbulence in He II with a MEMS Oscillator¹

ALEKSANDER LEVENTAL, JOSH BAUER, MIGUEL GONZALEZ, PAN ZHENG, YOONSEOK LEE, University of Florida, HO BUN CHAN, The Hong Kong University of Science and Technology — Micrometer scale mechanical oscillators based on MEMS technology have been developed for the study of quantum fluids and have been tested successfully at ultra low temperatures. Our recent low temperature test [1] in which the device was immersed in the superfluid phase of ⁴He revealed striking behavior below 400 mK: nonlinear and hysteretic resonance at high excitations. The observed phenomenon is thought to be related to vortices and quantum turbulence and warrants a systematic investigation for better understanding. We constructed an experimental set-up that allows us to cool a MEMS device in liquid ⁴He down to 50 mK at pressures up to 25 bar. We will discuss our new set-up and present our preliminary results performed at saturated vapor pressure.

[1] M. Gonzalez, B. Moon, P. Zheng, E. Garcell, H. B. Chan, and Y. Lee. *Journal of Low Temperature Physics, Online FirstTM*, 22 August 2012, DOI: 10.1007/s10909-012-0682-8.

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