

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Superfluid helium-4 in one dimensional channel¹ DUK Y. KIM, SAMHITA BANAVAR, MOSES H. W. CHAN, Department of Physics, Pennsylvania State University, University Park, PA 16802, USA, JOHN HAYES, PIER SAZIO, Optoelectronics Research Centre, University of Southampton, Highfield, Southampton SO17 1BJ, United Kingdom — Superfluidity, as superconductivity, cannot exist in a strict one-dimensional system. However, the experiments employing porous media showed that superfluid helium can flow through the pores of nanometer size. Here we report a study of the flow of liquid helium through a single hollow glass fiber of 4 cm in length with an open id of 150 nm between 1.6 and 2.3 K. We found the superfluid transition temperature was suppressed in the hollow cylinder and that there is no flow above the transition. Critical velocity at temperature below the transition temperature was determined. Our results bear some similarity to that found by Savard *et. al.* [1] studying the flow of helium through a nanohole in a silicon nitrite membrane.

[1] M. Savard, G. Dauphinais, and G. Gervais, Phys. Rev. Lett. **107**, 254501 (2011)

¹Experimental study at Penn State is supported by NSF Grants No. DMR 1103159.

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Date submitted: 09 Nov 2012

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