

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Non-classical response of solid helium confined in Vycor glass¹

DUK YOUNG KIM, CSQR and Department of Physics, KAIST, R.O.K., HYUNG CHAN KIM, Research and development division, NFRC, R.O.K., EUNSEONG KIM, CSQR and Department of Physics, KAIST, R.O.K., KAIST TEAM, NFRC COLLABORATION — The non-classical rotational inertia of solid ^4He was observed by a series of torsional oscillator experiments[1]. Probable heat capacity signature of the supersolid transition which coincides with the non-classical mass decoupling is also observed[2]. Recent torsional oscillator experiments suggest that disorder and the orientation of a helium crystal may play an important role in the appearance of non-classical rotational inertia. Accordingly, the investigation on the role of defects and crystal orientation may provide crucial clues to understand supersolidity. Solid helium confined in porous media cannot possess well-defined crystal orientation and is likely heavily populated with defects. Here we will present the pressure dependence of the non-classical rotational inertia in solid helium confined in Vycor glass by torsional oscillator techniques. [1] E. Kim and M. H. W. Chan, *Science* **305**, 1941 (2004); *Nature* **425**, 227 (2004); *J. Low Temp. Phys.* **138**, 859 (2005); *Phys. Rev. Lett.* **97**, 115302 (2006). [2] X. Lin, A. C. Clark, M. H. W. Chan, *Nature* **449**, 1025 (2007).

¹This work is supported by the Creative Research Initiative program of KOSEF.

Eunseong Kim
CSQR and Department of Physics, KAIST, R.O.K.

Date submitted: 27 Nov 2007

Electronic form version 1.4