Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

A Torsional Oscillator Study of Solid Hydrogen[1] ANTHONY CLARK, XI LIN, M.H.W. CHAN, Penn State University — Since the observation of superflow in solid ^{4}He, we have become interested in duplicating this phenomenon in other systems. In Kim and Chan's original work, trace amounts of ^{3}He, on the order of parts per million, were added to the system and found to significantly affect the transition. However, there is an altogether different system that is perhaps less complicated, and may also exhibit superflow. On the basis of the de Boer parameter, the most quantum solid other than the helium isotopes, is that of hydrogen. Thus, we have begun a torsional oscillator study of solid H_2 from dilution temperatures up to the triple point. Solid samples are formed by first filling the torsion bob with liquid H_2 at $\sim$14K, where the H_2 has already passed through ortho-para conversion chambers at 50K and 20K. The cell is then gradually cooled to the base temperature of our ^{3}He-^{4}He dilution refrigerator. We present our preliminary data of the resonant oscillation period as a function of temperature.

[1]This work is supported by NSF Grant DMR 0207071.

Anthony Clark
Penn State University

Date submitted: 01 Dec 2004 Electronic form version 1.4