Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Frequency Dependent Acoustic Properties of Superfluid ^{3}He in Aerogel.[1] B. H. MOON, N. MASUHARA, P. BHUPATHI, M. GONZALEZ, M. W. MEISEL, Y. LEE, NHMFL and Dept. Physics, Univ. Florida, Gainesville, FL 32611, N. MULDERS, Dept. Physics and Astronomy, Univ. Delaware, Newark, DE 19716 — Recently, we have reported the absolute sound (9.5 MHz) attenuation in superfluid ^{3}He impregnated in 98% porosity aerogel for several different pressures in zero magnetic field [1]. It revealed and confirmed many interesting features directly associated with impurity scattering: collisional drag effect, absence of zero sound crossover and order parameter collective modes, and gapless superfluidity. In this work, we report an experimental effort to uncover the detailed gap structure that is expected to be significantly modified by the presence of impurity scattering. We conducted frequency dependent attenuation measurements, which might shed light on this problem as a tunneling experiment does in superconductors. For the B-like superfluid phase of ^{3}He in 98% aerogel, we report sound attenuation measurements performed between 14 and 33 bar, while using four frequencies between 3.7 and 11.2 MHz.
[1] H.C. Choi *et al.,* Phys. Rev. Lett. **98**, 225301 (2007).

[1]This work is supported by NSF through DMR-0239483 and 0803516 (YL), DMR-0701400 (MWM), DMR-0654118 (NHMFL), and the State of Florida.

B. H. Moon
University of Florida

Date submitted: 21 Nov 2008 Electronic form version 1.4