Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

**Non-Contact Laser Based Ultrasound Evaluation of Canned Foods**[1] DAVID SHELTON, University of Evansville — Laser-Based Ultrasound detection was used to measure the velocity of compression waves transmitted through canned foods. Condensed broth, canned pasta, and non-condensed soup were evaluated in these experiments. Homodyne adaptive optics resulted in measurements that were more accurate than the traditional heterodyne method, as well as yielding a 10 dB gain in signal to noise. A-Scans measured the velocity of ultrasound sent through the center of the can and were able to distinguish the quantity of food stuff in its path, as well as distinguish between meat and potato. B-Scans investigated the heterogeneity of the samples contents. The evaluation of canned foods was completely non-contact and would be suitable for continuous monitoring in production. These results were verified by conducting the same experiments with a contact piezo transducer. Although the contact method yields a higher signal to noise ratio than the non-contact method, Laser-Based Ultrasound was able to detect surface waves the contact transducer could not.

[1]Purdue University REU Program / Dr. David Nolte advising

David Shelton
University of Evansville

Date submitted: 30 Nov 2004 Electronic form version 1.4