

Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Acoustic Scattering from Interaction of Dual Frequency Incident Fields MAX DENIS, CHRISNA NGUON, KAVITHA CHANDRA, CHARLES THOMPSON, University of Massachusetts Lowell — The pressure field produced by the spatial interaction of two high frequency incident plane waves in a three-dimensional scattering object is investigated. Of particular interest is the field produced in response to the difference-frequency component generated from the non-linear interaction of the two harmonically time varying acoustic beams in a high contrast medium. The scattered pressure at the difference frequency field has been shown to enhance the identification of abnormal biological tissue in recent medical ultrasound experiments. This work presents a computational study of the scattered pressure that results from the Reynolds stress in a fluid scatterer. Using Pade approximants, it is shown that the stress tensor can be computed using a uniform expansion in the contrast gauge for the scattered pressure. This allows one to investigate scattering volumes characterized by high compressibility contrast.

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Date submitted: 05 Aug 2011

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