

Abstract Submitted  
for the DFD05 Meeting of  
The American Physical Society

**Reflection and focus of shock waves in lithotripsy**<sup>1</sup> JONATHAN ILORETA, ANDREW SZERI, University of California, Berkeley, GEORGII SANKIN, YUFENG ZHOU, PEI ZHONG, Duke University — Controlling cavitation has been a primary focus in shock wave lithotripsy (SWL), and techniques such as pulse superposition and waveform inversion have been used to suppress and/or enhance bubble collapses. In order to assess the effectiveness of these ideas, a numerical model of the reflection and steepening of a pressure wave from an axisymmetric lithotripter has been made. The model is based on the Euler equations coupled with the Tait equation of state. It captures wave dynamics in the solid through changes in the reflection coefficient. Results of the pressure field for different reflector shapes are compared with experimental measurements from laser and spark induced shock waves. The designs are evaluated based on how they affect bubbles in the flow field.

<sup>1</sup>Research supported by NSF Program in Biomedical Engineering

Andrew Szeri  
University of California, Berkeley

Date submitted: 09 Aug 2005

Electronic form version 1.4