

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Optimization of Elastic Constant Values in Non-cubic Crystals using Computational Image Matching** MADELEINE MSALL, Bowdoin College, TIMOTHY HEAD, Abilene Christian University — Point excitation in ultrasound or heat pulse experiments excites non-equilibrium phonons that carry energy along the group velocity direction. Phonon images map the sharp boundaries between high and low flux regions, called caustics, which are directly related to folds in the acoustic wave surface. Computational simulations show that caustic positions are extremely sensitive to the values of the elastic constants. We explore methods of determining the elastic constants using image matching techniques. Given the dependence of single image features on a constellation of constants, there are many local minima encountered in the search. This talk will present quantifiable criteria for image matching in this context and discuss potential heuristic or stochastic methods to deal with the problem of local minima.

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Date submitted: 18 Nov 2010

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