Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

**Shock front broadening in polycrystalline materials** JOHN BARBER, KAI KADAU, Los Alamos National Laboratory — We analyze a model for the evolution of weak shock fronts (or elastic precursor waves) in polycrystalline materials. This model is based on the idea of Meyers and Carvalho [Mater. Sci. Eng. **24**, 131 (1976)] that the shock velocity anisotropy within the polycrystal is the most important factor in shock front broadening. Our analysis predicts that the shock front width increases as the 1/2 power of the front penetration distance into the crystal. Our theoretical prediction is in plausible agreement with previous experimental results for the elastic precursor rise time, and it should therefore provide a useful shock width estimate. Furthermore, our theoretical framework is also applicable to other problems involving front propagation in heterogeneous media.

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Date submitted: 05 Mar 2008 Electronic form version 1.4