

Abstract Submitted
for the SHOCK15 Meeting of
The American Physical Society

Evolutions of elastic-plastic shock compression waves in different materials¹ G.I. KANEL, Joint Institute for High Temperatures of Russian Academy of Sciences, E.B. ZARETSKY, Dept. of Mechanical Engineering, Ben Gurion University, Beer Sheva, Israel, S.V. RAZORENOV, A.S. SAVINYKH, G.V. GARKUSHIN, Institute of Problems of Chemical Physics of Russian Academy of Sciences — Measurements of decay of the elastic precursor wave are used to determine the initial plastic strain rate as a function of the stress. Last years we performed large series of such kind experiments with metals and alloys at various temperatures, ceramics and glasses. In course of these measurements we observed several unexpected effects which have not got exhaustive explanations yet. In the presentation, we'll discuss a departure from self-similar development of the wave process which is accompanied with apparent sub-sonic wave propagation, changes of shape of elastic precursor wave as a result of variations in the material structure and the temperature, unexpected peculiarities of reflection of elastic-plastic waves from free surface, effects of internal friction at shock compression of glasses and some other effects. It seems the experimental data contain more information about kinetics of the time-dependent phenomena than we are able to get from their analysis now.

¹Financial support from the Russian Science Foundation via Grant No 14-12-01127 is gratefully acknowledged.

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Date submitted: 03 Feb 2015

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