

Abstract Submitted
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The Generalized Courant-Friedrichs Equation of State for Condensed Matter MICHAEL GRINFELD, The US Army Research Laboratory — The (EOS) with separable internal energy play a big role in analysis of dynamics of deformable condensed matter [1]. For such models the internal energy density E , depending on the specific volume V and entropy density S can be presented in the form $E(V, S) = \Delta(V) + X(S)$, where the 2 functions $\Delta(V)$ and $X(S)$ — $E(V, S) = \Delta(V) + X(S)$ should be determined from experiment. We call this model the complete Courant-Friedrichs (CG) EOS. We suggest a generalized CF EOS depending on 3 functions and including the CF EOS as a special case. The additional degree of freedom permits us to take into account additional physical phenomena, including inelastic ones. We discuss the interrelations between the newly introduced generalized CF EOS and several classical EOS, including the incomplete Mie-Gruneisen EOS (depending on 2 functions) and its complete extensions. It is also discussed how the 3 functions can be recovered from experimental data.

[1] R Courant, K.O. Friedrichs, Supersonic flow and shock waves, Interscience, New York, 1948.

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