## A New Isothermal Equation of State for Solids

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A new isothermal equation of state (EOS) for solids is derived by starting from the theory of lattice potential and using an analytical function for the volume dependence of the short-range force constant. A critical analysis of the isothermal EOSs: Murnaghan EOS, Vinet EOS, and the new EOS derived here, is presented by investigating the pressure-volume data for rare gas solids, metals and minerals. It is found that the results obtained from the new EOS are in good accordance with the corresponding values obtained from the Vinet EOS and with experimental data for all the solids up to very large compressions. On the other hand, the Murnaghan EOS is less successful at high pressure in most cases.

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