Abstract Submitted
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An Equation of State for Ti-6Al-4V GEOFFREY COX, AWE — The alloy Ti-6Al-4V is used extensively in industry, and so an accurate equation of state (EoS) is needed for hydrocode simulations involving this material. An accurate model should include phase transitions, where across a phase boundary discontinuities in energy, density and other properties of the material are seen. Due to the limited data available for the alloy a multiphase EoS is first generated for titanium, before using a scaling method to obtain an EoS for Ti-6Al-4V. However, the final EoS produces a region of instability on the Hugoniot that has not been observed experimentally, and thus further improvements to the model are needed. Recommendations for future study are made, as well as detailing the difficulties faced using the current approach. Also, as an interim measure, a single phase analytic EoS is generated for Ti-6Al-4V which shows good agreement with the data available.

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