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Quantum Molecular Dynamics Simulations of Optical Reflectivity of Shock-Compressed Tin J.D. KRESS, L.A. COLLINS, S. MAZEVET, Los Alamos National Laboratory — Shock-compression experiments have measured the optical reflectivity of tin in an attempt to detect the melting during the release of the strongly shocked material. Recent quantum molecular dynamics (QMD) simulations have been successful at determining the optical properties of warm, dense materials such as shock-compressed deuterium and exploding wires made of aluminum and copper. In this work, we present QMD calculations of the optical conductivity and reflectivity of solid (cold) β-phase tin, representative of the pre-shock state, and of liquid (warm) tin, representative of a shock-compressed state. Calculated differences in the optical reflectivity between the cold and warm states will be compared with the measurements from shock-compression experiments.

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