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**Germanium Multiphase Equation of State** SCOTT CROCKETT, JOEL KRESS, SVEN RUDIN, GIULIA DE LORENZI-VENNERI, Los Alamos National Laboratory — A new SESAME multiphase Germanium equation of state (EOS) has been developed utilizing the best experimental data and theoretical calculations. The equilibrium EOS includes the GeI (diamond), GeII (beta-Sn) and liquid phases. We will also explore the meta-stable GeIII (tetragonal) phase of germanium. The theoretical calculations used in constraining the EOS are based on quantum molecular dynamics and density functional theory phonon calculations. We propose some physics rich experiments to better understand the dynamics of this element.

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