Abstract Submitted
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New transitions of MgSiO3 post-perovskite under ultrahigh pressure[1] KOICHIRO UMEMOTO, Department of Geophysics and Geology, University of Minnesota and Ames Laboratory, Iowa State Univand, SHUNQING WU, Ames Lab, Iowa state University and Department of Physics, Xiamen University, MIN JI, CAI-ZHUANG WANG, KAI-MING HO, Ames Lab, Iowa state University, RENATA WENTCOVITCH, Depeartment of Chem Eng Mat Sci, University of Minnesota — Understanding the behavior of $MgSiO_3$ post-perovskite (PPV) under extreme pressures is fundamental for modeling the interiors of super-Earth type exoplanets and the cores of solar giants. Previously, $MgSiO_3$ PPV was predicted to dissociate into MgO and $MgSi_2O_5$ and then into MgO and SiO_2 (Umemoto et al., Science 311, 983 (2006); Umemoto and Wentzcovitch, EPSL 311, 225 (2011)). Using the adaptive genetic algorithm, we predict new phase transitions in $MgSiO_3$. The phase diagram calculated using the quasi-harmonic approximation shows that some transitions can occur in some super-Earths type exoplanets.

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