

Abstract Submitted  
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**Properties of Hydrogen-Helium Mixtures at High Pressure and Temperature**<sup>1</sup> SAAD KHAIRALLAH, Earth and Planetary Science Department, University of California, Berkeley., JAN VORBERGER, Centre for Fusion, Space and Astrophysics, Department of Physics, University of Warwick, Coventry CV4 7AL, United Kingdom., BURKHARD MILITZER, Earth and Planetary Science Department, University of California, Berkeley. — Most of the over 200 recently discovered extrasolar planets are giant gas planets that consist primarily of dense, hot hydrogen and helium. Using density functional molecular dynamics (DFT-MD) simulations, we study these fluids at the extreme conditions found in planet interiors. We characterize the interaction of hydrogen and helium, analyze the electronic properties, and report on structural changes in the fluid as a function of density and temperature. We further study the influence of helium concentrations on the stability of hydrogen molecules.

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