Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Complex Electronic Transport Properties of Warm Dense Lithium JIAYU DAI, QIAN MA, HUAYANG SUN, CHENG GAO, National University of Defense Technology — Electronic transport properties such as thermal conductivity and optical absorption of dense plasmas are always a challenging topic in atomic physics, since the environment effect can introduce strong interactions and dynamics contributed by near atoms and temperature. Using quantum molecular dynamics, we studied the ionic structures and optical properties of warm dense Li up to a few hundred GPa and a few eV. The results show that the transport properties are strongly dependent on the electron charge distribution. When the electrons distributed localized, the conductivity becomes lower compared with the free electrons environment. Besides, the optical absorption from atomic model such as detailed level approximation is compared, showing the effect of many body interactions..

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Date submitted: 22 Jan 2016 Electronic form version 1.4