Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Electronic Structure and Equation of State of Warm Dense Gold
VANINA RECOULES, PATRICK RENAUDIN, PIERRE NOIRET, JEAN CLEROUIN, Departement de Physique Theorique et Appliquee - CEA/DAM Ile de France
— We present experimental measurements and theoretical estimations of the equation of state and the resistivity of warm dense gold (ρ =0.5 g/cm^3). The plasma was obtained in an isochoric plasma closed-vessel (EPI) designed to confine electrical plasma discharge up to 25 kbar. Theoretically, the properties were computed by quantum molecular dynamics simulation in the DFT/LDA approximation. The frequency dependent optical conductivity and the resistivity were evaluated using Kubo-Greenwood formula. The theoretical results reproduce well the experimental data allowing for a detailed interpretation of the theoretical optical conductivities. Drude's law was used to fit this calculated optical conductivities for low frequency to obtained relaxation times and free electrons number.

Vanina Recoules
CEA/DAM Ile de France

Date submitted: 21 Jul 2005 Electronic form version 1.4