

Abstract Submitted  
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**Electrical conductivity of liquid Hydrogen**<sup>1</sup> FEI LIN, University of Illinois at Urbana-Champaign, KRIS DELANEY, University of California, Santa Barbara, MIGUEL MORALES, University of Illinois at Urbana-Champaign, CARLO PIERLEONI, University of L'Aquila, RICHARD MARTIN, DAVID CEPERLEY, University of Illinois at Urbana-Champaign — DC electrical conductivity of liquid Hydrogen under high pressure has been measured by shock-wave experiments a long time ago [Phys. Rev. Lett. 76, 1860 (1996)], however, an accurate theoretical calculation of electrical conductivity is still unavailable. Ab-initio DFT calculations seem to overestimate the DC conductivity value by about 6 times. On the other hand, coupled electron-ion Monte Carlo (CEIMC) simulation [Phys. Rev. Lett. 97, 235702 (2006)] has predicted different high-pressure Hydrogen molecular-atomic transition than the DFT calculation. In this talk I will report our preliminary electrical conductivity results from CEIMC simulations using the Kubo formula with energies and current-current matrix elements computed with correlated quantum Monte Carlo methods.

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