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Ab initio equation of state of hydrogen for inertial fusion applications LORIN X. BENEDICT, MIGUEL A. MORALES, ERIC SCHWEGLER, ISAAC TAMBLYN, STANIMIR A. BONEV, ALFREDO A. CORREA, DANIEL S. CLARK, STEVEN W. HAAN, Lawrence Livermore National Laboratory, LLNL COLLABORATION — We describe *ab initio* electronic structure calculations (DFT molecular dynamics and quantum Monte Carlo) of the equation of state of hydrogen in a regime relevant for ICF applications. We find the computed EOS to be quite close to that of the most recent SESAME table (constructed by G. Kerley, 2004). A simple density-dependent correction brings the recent SESAME EOS into nearly perfect agreement with ours in the chosen region. Simulations of ICF applications with this *corrected* SESAME table are discussed.

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