

Abstract Submitted  
for the DAMOP07 Meeting of  
The American Physical Society

**Hybrid Theory of Electron-Hydrogen Scattering** ANAND BHATIA,  
NASA/Goddard Space Flight Center — I report on a study of electron-hydrogen scattering, using a combination of a modified method of polarized orbitals and the optical potential formalism which does not require projection operators. The calculation is restricted to S-wave scattering in the elastic region, where the correlation functions are of Hylleraas type. It is found that the phase shifts are not significantly affected by the modification of the target function by a method similar to the polarized orbitals and they are close to the phase shifts calculated by Bhatia and Temkin [Phys. Rev. A 64, 032709-1 (2001)]. This indicates that the correlation function is general enough to include the target distortions (polarization) in the presence of the incident electron, except for scattering lengths for which inclusion of polarization is essential for precision results. Results for the phase shifts, obtained in the present hybrid formalism, are rigorous lower bounds to the exact phase shifts.

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Date submitted: 26 Jan 2007

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