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Hybrid calculation of P-wave e-Li ion scattering and photoabsorption ANAND BHATIA, NASA/Goddard Space Flight Center — A variational wave function incorporating short range correlations via Hylleraas type functions plus long-range polarization terms of the polarized orbital type but with smooth cut-off factors has been used to calculate P-wave phase shifts for electron-Li^{+2} scattering. This approach gives the direct r^{-4} potential and a non-local optical potential which is negative definite. The resulting phase shifts have rigorous lower bonds and the convergence is much faster than those obtained without the modification of the target function. The continuum functions obtained in such calculation have been used to calculate photoabsorption cross sections of ground and metastable states in H^-, He, and Li^{+1}. These cross sections have been used to calculate recombination rate coefficients. Final results will be presented at the conference.

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