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Rotationally-resolved electron scattering on H_2 with the molecular convergent close-coupling method[1] UNA REHILL, LIAM SCARLETT, DMITRY FURSA, IGOR BRAY, Curtin University, MARK ZAMMIT, Los Alamos National Laboratory — Cross sections for e-H_2 scattering are of fundamental importance for modeling fusion, astrophysical, and industrial plasmas. Accurate collisional-radiative modelling requires comprehensive sets of cross sections for electronic, vibrational and rotational excitations. In recent years the molecular convergent close-coupling (MCCC) method has been applied to the e-H_2 scattering problem with the goal of producing a complete set of scattering cross sections for all important transitions. Electronic and vibrationally resolved cross sections have been calculated previously, and now the MCCC method is utilized to generate rotationally-resolved cross sections. Previous research has seen reasonable agreement between theory and experiment for low-lying rotational excitations of H_2 without electronic excitation, but there is little data available for simultaneous electronic and rovibrational excitation. In this talk we present results for rovibrational excitation of the ground and low-lying excited electronic states, including the $B\ ^1\Sigma_u^+$ and $C\ ^1\Pi_u$ states which are of interest in astrophysical applications, and the $d\ ^3\Pi_u$ state which has garnered significant attention due to its importance in Fulcher-α band spectroscopy.

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