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Resonant Dissociative Recombination of ArH^+ V. NGASSAM, A.E. OREL, Engr Applied Science, UC Davis — The rate coefficient for the ArH^+ dissociative recombination with electrons has been measured at the ASTRID storage ring in Denmark. The rate coefficient, as a function of the electron energy, displays several broad peaks between 5 and 35 eV. The first peak is due to dissociative recombination via the capture of the incoming electron by doubly excited Rydberg states converging to the excited state of the ion (Ar^+ ^2P + H ^1S). We will present the results of electron scattering calculations using the Complex Kohn variational method which were carried out to determine the positions and autoionization widths of the resonant states. These parameters were used in a time-dependent wave packet calculation to describe the dissociation dynamics. We also explore the low energy region where the non-adiabatic couplings between the ion, the Rydberg and the valence states drive dissociative recombination. The cross sections and dissociation rates will be compared to the available experimental data.

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