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Dissociative recombination of H3+[1] SAMANTHA SANTOS, VIATCHESLAV KOKOOULINE, Department of Physics of University of Central Florida, CHRIS GREENE, Department of Physics and JILA, University of Colorado — The process of dissociative recombination (DR) of the $^{H3+}$ ion has been studied over the past years and it was found that the coupling of vibrational and electronic degrees of freedom plays a crucial role in the mechanism: when the Janh-Teller coupling effect was incorporated into the theoretical treatmnet it yielded DR rates in much better agreement with experiments. The previous work on H3+ was performed using hyperspherical coordinates and Siegert states for the vibrational wave functions. SVD technique employed in this study provides more accurate vibrational energies than the Siegert state approach for it takes into account the non-adiabatic coupling between different adiabatic channels. Another improvement towards theory-experiment agreement was to take into account the conditions and parameters of the experiments performed. The present approach uses SVD vibrational states in the calculatiion of H3+ DR rates and accounts for experimental conditions. Incorporating averaging procedures that describe better the experimental conditions improves the agreement between theory and experiment. Results for vibrationally-excited initial states of H3+ are also presented in this work.

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