

Abstract Submitted
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Dissociative Recombination in H_3^+ : a Scattering Matrix Approach¹ VIATCHESLAV KOKOULINE, CHI HONG YUEN, JOSHUA FORER, Univ of Central Florida — Dissociative recombination (DR) is the main destruction mechanism of the H_3^+ ion in the interstellar medium, which plays an important role in the interstellar chemistry. Previously, a detailed theoretical approach could reproduce main features of the experimental cross section measured in storage-ring experiments. However, energies of Rydberg resonances resolved in the experimental data are not well reproduced by the theory. The reason could be due to the energy-independent scattering matrix employed in the theoretical approach. We are now developing a different version of the approach in which the main improvement is the use of an energy-dependent scattering matrix. In this study we present some preliminary theoretical results on the updated approach. The results are compared with the data from storage ring experiments and the previous theoretical approach. The obtained result is about a factor of two larger than the previous studies, suggesting that the autoionization of the vibrationally-excited Rydberg molecule H_3^{**} may be important in the case of H_3^+ .

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