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Dissociative recombination of HCO^{+}[1] STEFANO TONZANI, University of Colorado Boulder, AASA LARSON, KTH, Stockholm, Sweden, VIATCHESLAV KOKOOULINE, University of Central Florida, Orlando, IVAN MIKHAYLOV, University of Central Florida, ROBIN SANTRA, ITAMP, Harvard, CHRIS H. GREENE, University of Colorado Boulder — The dissociative recombination (DR) mechanism of the important interstellar ion HCO+ at low electron energies is studied theoretically. Our work suggests that DR is driven through capture into Rydberg states, and that no direct mechanism operates at collision energies below a few eV. Our approach includes accurate quantum chemical calculations, the three-dimensional vibrational dynamics and a treatment of the joint electron-nuclear dynamics is treated using quantum defect theory and a frame transformation approach. Results are presented for the calculated autoionization widths of Rydberg states and the dissociative recombination cross sections, and compared with available experiments.

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