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Mechanisms of dissociative recombination of N_2H^+ and HCO^{+1} SAMANTHA FONSECA DOS SANTOS, NICOLAS DOUGUET, ANN OREL, UCDavis, VIATCHESLAV KOKOOULINE, UCF — N_2H^+ and HCO⁺ are among the first molecular ions observed in the interstellar medium. They are both formed by fast proton transfer mechanisms and are destroyed either by taking part on the molecular synthesis of more complex molecules or by dissociative recombination (DR). Given the astrophysical importance of these ions, their DR rates have been the subject of several different studies over the years. Recently, good agreement between theory and experiment have been achieved for HCO^+ , however this is not the case for N_2H^+ . This is mainly due to the fact that previous theories only considered the direct DR mechanism in their calculations. Applying a general simplified model based on multichannel quantum defect theory that accounts for all the main ingredients of indirect DR we calculate cross sections and DR rates for N_2H^+ as well as for HCO^+ using an improved coupling scheme.

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