Collisional and radiative processes involving some small molecules: cross sections and rate coefficients

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Many fields in astronomy such as astrophysics, astrochemistry and astrobiology, depend on data for atomic and molecular collision and radiative processes (Albert et al., 2020; Srećković, et al. 2022). Moreover, in the age of precision astronomy, determining the chemical composition of the early Universe necessitates a precise assessment of the reaction rates of the primary chemical processes involved. Abundances and processes (recombination, destruction, etc.) which involve small molecular ions can play an important role in the modeling such environments (Gnedin et al., 2009; Srećković et al. 2020). Our aim is to obtain theoretically – calculate, compare and analyse cross sections and rate coefficients, i.e., data, about such small systems involving lithium, hydrogen and helium, etc. molecular ions for a wide range of parameters.

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