
Some Poorly Understood Classes of Interstellar Reactions

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Résumé

Networks of interstellar gas phase and granular reactions contain thousands of processes. Some of these processes are well studied, either experimentally or theoretically, while others are very poorly constrained. In my talk, I will discuss various classes of gas-phase and grain-surface reactions and point out what processes are reasonably well understood and which need significantly more study in the laboratory. For example, in the realm of gas-phase processes, dissociative recombination reactions represent a success story thanks to the many studies with storage rings. As another example, low-temperature experiments now show the importance of tunneling in neutral systems. On the other hand, radiative association ($A + B \rightarrow AB + h\nu$) and radiative attachment ($A + e \rightarrow A^- + h\nu$) are two important gaseous interstellar processes with barely any experimental studies. In the realm of granular reactions, the processes leading to water ice have been well studied whereas those predicted to lead to complex organic molecules are virtually untouched.

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