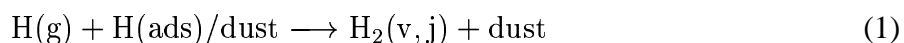


Quantum dynamical calculations on the surface catalysed formation of H₂ in interstellar space.

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H₂ is one of the most important molecules in the interstellar medium. It plays a pivotal role in interstellar chemistry through reactions with ions and radicals. Furthermore, the energetics of the H₂ formation reaction directly affect the thermal balance of the interstellar medium. It is widely accepted that the dominant mechanism for the formation of H₂ in interstellar clouds is through surface-catalysed reactions on dust-grains.¹



In this talk I will present quantum dynamical calculations using time-dependent wave packets, performed on reaction (1), whereby we have represented the interstellar dust-grain by a graphite surface. I will also discuss similarities and differences with the formation of the isotopic analogues HD and D₂. These calculations will be compared to recent experimental and observational studies performed in the Centre for Cosmic Chemistry and Physics at University College London (UK).

¹ H. C. van der Hulst, *Rec. Astron. Obs.* **XI(II)** (1949).