Theoretical Studies of Dissociative Recombination of Electrons with SH\(^+\) Ions\(^1\) D. O. KASHINSKI\(^2\), J. T. BOHNEMANN, United States Military Academy, A. P. HICKMAN, Lehigh University, D. TALBI, Universityé Montpellier — We are investigating the dissociative recombination (DR) of electrons with the molecular ion SH\(^+\), i.e. \(e^- + \text{SH}^+ \rightarrow \text{S} + \text{H}\). SH\(^+\) is found in the interstellar medium (ISM), and its chemistry is still not fully understood. Understanding the role of DR of electrons with SH\(^+\) will lead to more accurate astrophysical models. Recently we addressed the \(^2\Pi\) potential energy curves (PECs) of SH as a DR pathway \(^3\). We are extending this work to investigate the ground and excited \(^4\Pi\) PECs of SH as an alternate DR pathway. Large active-space multi-reference configuration interaction (MRCI) electronic structure calculations were performed using the GAMESS code to obtain the PECs for several values of SH separation. Rydberg-valence coupling has proven to be important. The block diagonalization method was used to disentangle interacting states and form a diabatic representation of the PECs. The status of this ongoing work will be presented at the conference.

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