Abstract Submitted
for the DAMOP18 Meeting of
The American Physical Society

Dissociative electron attachment of polyatomic molecule at low collision energies: application to H_2CN[1] VIATCHESLAV KOKOOULIN, University of Central Florida, Orlando, FL, SAMANTHA FONSECA DOS SANTOS, Rollins College, Winter Park, FL, CHI HONG YUEN, University of Central Florida, Orlando, FL — Dissociative electron attachment (DEA) of molecules is an important process in various plasma environment. Despite several approaches developed for diatomic molecules, the theoretical description of the DEA for polyatomic molecules is an extremely complex problem. Following the treatment proposed by Bardsley (1968) developed for diatomic molecules, we extend the formalism of resonant scattering to polyatomic molecules, assuming that there is no vibrational excitation. We applied our method to the H_2CN molecule, which has six normal modes and is responsible for the formation of the CN^- and H^- ions and the HCN molecule in the interstellar space. Positions and widths of the resonances responsible for DEA process are computed using the UK R-matrix code. The partial width for the electron capture is obtained from the time-delay matrix. With the new model, the total DEA cross section for H_2CN molecule is computed.

[1]Supported by the National Science Foundation, Grant No PHY-15-06391

Viatcheslav Kokooulin
University of Central Florida

Date submitted: 25 Jan 2018 Electronic form version 1.4