

Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

Formation of the simplest stable negative molecular ion H_3^- in interstellar medium¹ VIATCHESLAV KOKOULINE, Department of Physics, U Central Florida, MEHDI AYOZ, MAURICE RAOULT, JACQUES ROBERT, OLIVIER DULIEU, Laboratoire Aime Cotton, U Paris-XI, CNRS, Orsay — We present the theory of radiative association of atoms and molecules, and we apply it to the $(\text{H}_2\text{-H}^-)$ van der Waals complex. We discuss the possibility for the H_3^- ion to be formed in the interstellar medium in an environment with abundant electrons. The observation of H_3^- would also be a probe for the presence of H^- in the interstellar medium. By computing the electronic structure of the H_3^- ion, we determine its dipole moment, bound states, rotational constants, predissociated vibrational resonances and their lifetimes, and suggest a way to detect the ion in the interstellar medium.

¹Supported by Triangle de la Physique contract QCCM and the National Science Foundation grant PHY-0855622

Viatcheslav Kokoouline
Department of Physics, U Central Florida

Date submitted: 22 Jan 2010

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