

Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

Bound states, resonances, and formation of the H_3^- anion¹ VIATCHESLAV KOKOULINE, Department of Physics, U Central Florida, MEHDI AYOZ, JACQUES ROBERT, OLIVIER DULIEU, Laboratoire Aime Cotton, U Paris-XI, CNRS, Orsay — Accurate potential energy surface and permanent dipole moments of the H_3^- molecule are calculated. The obtained potential energy surface is used to obtain bound states, rotational constants, predissociated vibrational resonances and their lifetimes of the four isotopologues, H_3^- , H_2D^- , D_2H^- , and D_3^- , of the ion. We have also calculated the cross-section for the formation of H_3^- by radiative association: $\text{H}_2 + \text{H}^- \rightarrow \text{H}_3^- + \hbar\omega$. The obtained results suggest that the H_3^- ions can be formed in the interstellar medium (ISM). An eventual detection of H_3^- in the ISM would also be a proof that the H^- ion is present in the ISM.

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

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Date submitted: 22 Jan 2010

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