

Abstract Submitted
for the DAMOP05 Meeting of
The American Physical Society

Electron affinity of hydrogen atom and resonance state of hydrogen negative ion in screened Coulomb potentials¹ YEW KAM HO, SABYASACHI KAR, Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei — The $2s^2 \ ^1S^e$ autoionization resonance state of hydrogen negative ion embedded in screened Coulomb potentials is determined by calculating the density of resonance states using the stabilization method as an extension of our earlier work [1]. The Electron affinity of hydrogen atom in such potentials is also calculated. A screened Coulomb potential can be used for the Debye model in plasmas physics. A correlated wave function consisting of a generalized exponential expansion has been used to represent the correlation effect between the three charge particles. The screening effect is taken care of for all pairs of the charge particles, whereas in our earlier work the screening for the electron-electron pair was not explicitly included. The calculated resonance energies and widths for various Debye parameters ranging from infinity to a small value along with the electron affinity are reported. * Support by the National Science Council of Taiwan, ROC. [1] S. Kar and Y. K. Ho, *Phys. Rev. E* **70** (2004) 066411.

¹Support by the National Science Council of Taiwan, ROC.

Yew Kam Ho
Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei

Date submitted: 26 Jan 2005

Electronic form version 1.4