

Abstract Submitted  
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**Hydrogen Molecule in the Frame of the Three-Body Santilli-Shillady Model** RAUL PEREZ-ENRIQUEZ, Departamento de Física, Universidad de Sonora, J. MARIN, R. RIERA, Departamento de Investigación en Física, Universidad de Sonora — We analyze the charge distribution structure of a Hydrogen molecule under the Restricted Three-body Santilli-Shillady Model. Using the stable isoelectronium model, a particle with  $M = 2m_e$  and  $q = -2e$ , we found a compatible ground state of  $H_2$  which overcomes the problems of that developed by Aringazin and Kucherenko. Our model makes use of energies and bond lengths of the ground state of Hydrogen as calculated by Kolos and Wolniewicz in 1968, and assumes that the isoelectronium is restricted to move over a confined region of space around the nuclei. This compatible ground state can be obtained following the Ley-Koo solution to Schrödinger equation for Hydrogen molecular ion confined by a spheroidal box and we think it could be used for a better understanding of phenomena associated with correlated electrons in molecular bonds as it is observed in double photoionization and neutron scattering experiments. The self consistency of our results comes right from the correlation between the protons bond length,  $R$ , and the size of the spheroidal box,  $a = \frac{1}{2}\xi_0 \cdot R$ .

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