

Selected Abstracts from Other Physical Review Journals

Abstracts of papers that are published in other Physical Review journals and may be of interest to Physical Review E readers are printed below.

Ground bound state in the fully adiabatic ${}^{\infty}\text{H}_2^+$ ion. Alexei M. Frolov, *Department of Chemistry, Queen's University, Kingston, Ontario, Canada K7L 3N6.* (Received 25 February 2003; published 11 June 2003)

The fully adiabatic ${}^{\infty}\text{H}_2^+$ ion is considered by using the improved version of our multibox variational procedure [A.M. Frolov, Phys. Rev. E **64**, 036704 (2001)]. This procedure has been developed and successfully tested in highly accurate computations of bound-state spectra of various three-body systems. Note that our method is not based on the Born-Oppenheimer approximation, i.e., it is a nonadiabatic approach. In this study, we determine the ground-state energies of the adiabatic HD^+ , HT^+ , and T_2^+ ions with finite nuclear masses. The computed variational energies for the HD^+ , HT^+ , and T_2^+ ions are $-0.597\,897\,968\,645\,036\,508$ a.u., $-0.598\,176\,134\,669\,766\,232$ a.u., and $-0.599\,506\,910\,111\,541\,451\,13$ a.u., respectively. The ground-state energy and bound-state properties of ${}^{\infty}\text{H}_2^+$ ion are also presented. In general, the observed agreement between our variational energies and analogous energies determined with the use of pure adiabatic methods can be considered as very good. [Phys. Rev. A **67**, 064501 (2003)]