Report on the Evaluation of Chapter 7 in "The Grand Unified Theory of Classical Physics" by Dr. Randell L. Mills

Prepared by

Randy A. Booker, Ph.D.
57 Azalea Drive
Weaverville, NC 28787
(828) 251-6269
Booker@unca.edu

January 28, 2018
Revised December 3, 2018

Executive Summary

In my analysis, I verified calculations and the steps involved in deriving equations involving two electron atoms found in Chapter 7 of the book “The Grand Unified Theory of Classical Physics” by Dr. Randell L. Mills. I verified all the values in Table 7.1 and Table 7.2 to a high degree of accuracy. In the course of these calculations, I replicated the vast majority of the CP results to an excellent degree of accuracy.

Purpose

In Chapter 7, the radius of electron 1 and 2 are found by balancing forces, namely the outward centrifugal on electron 2 is balanced by the electric force and the magnetic force on electron 2. Next the electric energy, potential energy, kinetic energy, and the magnetic work are derived. From the electric and magnetic energy the Ionization Energy is determined. Table 7.1 compiles these radii, electric energies, magnetic energies, velocities, relativistic correction factors, and theoretical ionization energies. The agreement between the theoretical ionization energies and the experimental ionization energies for these two-electron atoms is amazing. Mill’s calculations are in excellent agreement with the known experimental ionization energies.

Next, the hydride ion system is analyzed. A hydride ion is where a second electron binds to a hydrogen atom. Again the radii are calculated. The ionization energy is calculated, which agrees exactly with the experimental value of the ionization energy (0.75418 eV). The ionization energy of the deuterium hydride ion is calculated and it agrees very well with its known experimental value, also.

Then the hydrino hydride ion is discussed. This is where a hydrino atom H(1/2) can gain an extra electron and form a stable hydride ion. A formula for the ionization energy is given based on the calculated radii of the two electrons. Table 7.2 compiles these radii, calculated ionization energies, and calculated wavelengths for several species of hydrino hydride ions.

Next the nuclear magnetic resonance shift of the hydrino hydride ion is calculated. Then hydrino hydride ion hyperfine line splittings are discussed next. Experimental evidence supporting the existence of these hyperfine lines is presented – the ordinary hydride spectrum is seen in the Sun.

Calculation

I have verified Equations 7.2 – 7.7, 7.10, 7.11, 7.13-7.20, and 7.22.

I have verified the algebra involved in Equations 7.25-7.35 and find them to be correct. I have verified Equations 7.37-7.42 as well.

On page 253, I have verified Eq. (1) and the values that come from Eqs. (2)-(4) and (6)-(7). I have also verified as correct the equations 7.45, 7.47, 7.49, 7.51, 7.52, and 7.55-7.58.

I have verified the equations 7.59-7.63 as correct, as well.

In Table 7.1, all of my r_1 values agree exactly with the CP results. My values for the Electric energies and Magnetic energies were very close to the stated CP results (the disagreement was small – usually in the last decimal place and could be due to my rounding). All my values for the velocities agreed exactly. All of my values for γ^* agreed exactly with the CP results. All of my values for the Theoretical Ionization Energies were very close to the CP results (again, to last decimal point). All of my values for the relative errors agree exactly with the values reported for them in Table 7.1.

I have also verified Eqs. 7.65-7.69 as correct. I got the calculated value for the ionization energy of the hydride ion to be 0.75418 eV as stated in the line after Equation 7.69. And I verified that the calculated ionization energy of the deuterium hydride ion is 0.75471 eV as stated in the middle of page 259. I verified that the experimental values for these two ionization energies were correct as derived from their quoted wavenumbers.

I verified that Equations 7.70 and 7.71 are true. I verified that 3.047 eV corresponds to a wavelength of 407 nm, as stated in the book. And I verified as correct the equations 7.72-7.74.

In Table 7.2, all of my r_1 values agree exactly with the stated CP results. All of my Calculated Ionization Energies agreed with the stated CP results. All of my Calculated Wavelengths agree with the CP results of Table 7.2.

I verified Eq. 7.79 (and the value of –p29.9 ppm quoted in Eq. 7.81). In the first line after Equation 7.76, I verified the value 9.39496T as being correct.

I verified Eqs. 7.82-7.84. And I verified as correct Eq. 7.87 and its value, Eq. 7.89 and its value, and Eq. 7.90 and its value.

I verified Eqs. 7.91, 7.93, 7.94, 7.95, 7.96 and the values they yield.

Conclusion

I was able to verify the CP results of Chapter 7 in excellent agreement with my own calculations. I was able to replicate the derivation of Dr. Mills' equations to an excellent degree of accuracy. All my results in Table 7.1 agree very well with Dr. Mills' results. All of my values agree with Dr. Mills' results in Table 7.2. I find this to be confirmation that the calculations included in Chapter 7 are indeed valid and reproducible.

To be able to solve a two-electron atom/ion using Dr. Mills' Classical Physics is truly an amazing feat. A two electron system is a three body problem, which in classical mechanics has no closed form solution. It has to be solved by approximation methods using numerical analysis on a computer, and then the results are only an approximation. The fact that Dr. Mills' theory can solve two-electron systems exactly is truly remarkable. And the agreement with experimental values shows very little error. This is a tremendous accomplishment and should not be taken lightly. Quantum mechanics can't solve these systems exactly, and must rely on approximation methods, and the results aren't very close to experimental values even then. Only this new theory of Classical Physics can solve them exactly. I never thought I'd see the day when this was accomplished, until I met Dr. Mills and his theory. Remarkable.