Report on the Evaluation of Chapter 38 Quarks in "The Grand Unified Theory of Classical Physics" by Dr. Randell L. Mills

Prepared by

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Executive Summary

In my analysis, I verified calculations and equations involving the properties of quarks and the three quark neutrons (ddu, ssc, and bbt) found in Chapter 38 of the book "The Grand Unified Theory of Classical Physics" (January 2020 edition) by Dr. Randell L. Mills. There is a remarkable agreement between the GUTCP calculated equations and the equations I get from my calculations. I verified that all the equations found in the chapter from 38.1 through 38.31 were in fact true. It is seen later in the chapter that there is an excellent agreement between the relativistically-corrected m_{ddu} calculated value from the GUTCP theory and the m_{ddu} experimental value. And it is shown that there is also an excellent agreement between the relativistically-corrected m_N/m_e calculated value and the experimentally known m_N/m_e value (where N=ddu=neutron). This shows the remarkable agreement between the GUTCP theory and known measured values.

Purpose

There are three generations of quarks. The bound individual quark mass is found from the quark mass and the mass deficit of Chapter 1. The relationship between the neutron proper time and the coordinate time is used to find the quark masses. It is found that the ddu neutron and the anti-ddu neutron correspond to the Planck equation energy. Likewise, the ssc neutron and the anti-ssc neutron correspond to the electric energy. And the bbt neutron and the anti-bbt neutron correspond to the magnetic energy.

The mass of the ddu neutron is found by using the relationship between the neutron proper time and the coordinate time. It is close to, but differs somewhat, from the experimental ddu neutron mass. Relativistic corrections will be taken into account at the end of Chapter 38, where it will be seen that there's an excellent agreement between the GUTCP m_{ddu} calculated and m_{ddu} experimental.

Next, the mass of the ssc neutron is found using the relationship between the neutron proper time and the coordinate time. The GUTCP calculated value of m_{ssc} is in excellent agreement with m_{ssc} experimental.

Next, the mass of the bbt neutron is found using the relationship between the neutron proper time and the coordinate time. m_{bbt} yields a value for m_{top} calculated that's in excellent agreement with m_{top} experimental – showing the accuracy of the GUTCP theory in describing quarks.

Then, the mass ratios m_N/m_e, m_{ssc}/m_{ddu}, m_{bbt}/m_{ssc}, and m_{bbt}/m_{ddu} are found in equation form. It is seen (as it was shown before for the Lepton mass ratios) that all of these mass ratios depend solely on the fine structure constant α. The ratio m_N/m_e is relativistically corrected, and there is seen an excellent agreement between the relativistically-corrected m_N/m_e calculated value and the experimentally known m_N/m_e value. This also indicates a remarkable accuracy of the GUTCP theory in describing quarks.

Calculations

I have verified that Equations 38.1-38.7 are correct.

I have verified that the value given in Equation 38.8 is correct.

I have also verified that Equations 38.9, 38.10, and 38.15 are correct.

I have verified that the values given in Equations 38.11, 38.13, and 38.16 are correct.

And I have verified that Equations 38.17-38.20, as well as Equation 38.22, are true and correct.

I have shown that Equations 38.23-38.26 and their values are correct.

And I have shown that Equations 38.27-38.29 are correct as written.

And lastly, I have shown that the values given in Equations 38.30-38.31 are correct.

Conclusion

I was able to verify the GUTCP results of Chapter 38 in excellent agreement with my own calculations and derivations of equations. I successfully reproduced all of the equations, derivations, and calculations found in Chapter 38. This chapter demonstrates that the GUTCP theory is very successful at predicting the nature of quarks and the three quark neutrons (ddu, ssc, and bbt) to a high degree of accuracy. There is an excellent agreement between the relativistically-corrected m_{ddu} calculated value from the GUTCP theory and the m_{ddu} experimental value. And there is also an excellent agreement between the relativistically-corrected m_N/m_e calculated value and the experimentally known m_N/m_e value (where N=ddu=neutron). This shows the remarkable agreement between the GUTCP theory and known measured values of Nature.

I find my results and calculations to be confirmation that the derivations and equations of Chapter 38 are indeed valid, reproducible, and accurate.