**Report on the Evaluation
of Chapter 28
Creation of Matter from Energy
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 Creation of Matter from Energy found in Chapter 28 of the book "The Grand Unified Theory of Classical Physics" (January 2020 edition) by Dr. Randell L. Mills. I verified equations and calculations to a high degree of accuracy that are associated with this effect. There is a remarkable agreement between the GUTCP calculated equations and the equations I get from my calculations. I verified all the equations from 28.1 through 28.17.

# Purpose

In Chapter 28, matter and energy are shown to be interchangeable with each other. In fact, matter and energy are different aspects of the same quantity, named mass/energy. Matter appears as frozen energy.

Matter and energy can be changed from one into the other with no loss in "mass/energy". In fact, there is a conservation of mass/energy going on here. Now a photon is pure energy. And we know that matter can be created from a photon. Think of Pair Production, where an electron and a positron (particles) can be made from a photon (pure energy). It also goes further than this. Matter has an effect on spacetime, according to General Relativity – matter will cause spacetime to curve. The more matter there is, the more curvature of spacetime there is.

Dr. Mills states that a transition state is needed for the transformation of energy into matter. This transition state is more formally called a transition state atomic orbital. This state results in some of the properties of matter that we observe: Matter and energy possess mass; Matter possesses charge; Energy is stored in the Electric and Magnetic fields of the photon; and Charge arises from electromagnetic radiation when matter is created.

The important relationship $r = \alpha a_o$ is derived, where $\alpha$=the fine structure constant and $a_o$=the Bohr radius. The familiar results for energy being $E = mc^2$ and $E = (\text{h-bar})\omega$ are used as well in this discussion.

Energy is seen to be stored equally in the Electric and Magnetic fields of a photon. This equivalence also is seen to occur for an LC circuit excited at its resonance frequency. Dr. Mills states that spacetime is an LC circuit with angular resonance frequency given by $\omega = [LC]^{-1/2}$. He goes further to state that spacetime is excited at its resonance frequency when a photon of angular frequency forms a transition state atomic orbital of mass/energy $m_e c^2$. He says as the transition state atomic orbital becomes Real, a photon of energy $m_e c^2$ becomes a particle.

Dr. Mills sees in the interconversion of energy into matter a grand unification of the fundamental laws of the Universe, Maxwell's Equations, Newtonian Mechanics, Special and General Relativity, the Planck Equation, and the deBroglie relationship. The concept of the interconversion of energy into mass runs through every field of Physics.

## Calculations

I have verified that Equations 28.1-28.8 are true and correct.

I have verified that Equation 28.10 and the four equations in footnote 1 at the bottom of page 1446 are also correct.

I have also verified that Equations 28.11-28.12 are correct.

And I have verified that Equations 28.14-28.17 are true and correct.

## Conclusion

I was able to verify the GUTCP results of Chapter 28 in excellent agreement with my own calculations and derivations of equations. I successfully reproduced all of the equations and derivations found in Chapter 28. This chapter demonstrates that the GUTCP theory is successful at describing the energy equations pertaining to the creation of matter from energy to a high degree of accuracy.

I find my results and calculations to be confirmation that the derivations and equations of Chapter 28 are indeed valid, reproducible, and accurate.