

# A Fledgling Model of the Universe

Mark Ridler

## Abstract

- What if the predictions of the Dirac equation are right but the standard interpretation since 1934 has been only half right?

This is a reference to the pioneering work of Don Hotson in “Dirac’s Equation and the sea of negative energy, Infinite Energy magazine, issues 43 and 44. Actually the sea is only one solution. We could do as well with a ratio of 50:50 positive to negative mass.

- What if the single “unified force” is very much single and still at work today, not just in the earliest moments of the universe?

This is a reference to the work by Mark Ridler which unifies gravity and electromagnetism at the quantum level, Infinite Energy magazine, volume 25, issue 146, pages 29-39.

- What if Dark Matter and Dark Energy are both derived from superfluid negative mass?

This is the thesis of Jamie Farnes on Arxiv, 2018. It is also the thesis of Mark Ridler on <http://www.dirac-was-right.com> 2013-2019.

# Negative Mass

Given:

- **A Unifying Theory of Dark Energy and Dark Matter: Negative Masses and Matter Creation within a Modified  $\Lambda$ CDM Framework** J.S. Farnes  
[Astronomy and Astrophysics 620, A92 \(2018\)](#)

If we are living in a Farnes universe then we should expect negative mass to be pervasive here on Earth not just out in the cosmos.

Don Hotson postulates 4 type of electron, 2 of which have negative energy. Whilst he stops short of postulating negative mass, it is a short step to do so via  $E = mc^2$ .

Given the above, it is fair to ask why we haven't observed negative mass here on Earth?

One answer is that maybe we have seen it but not recognised it for what it is.

For example, given negative mass's tendency to combine with positive mass and go haring off at the speed of light, we should be looking at the composition of the light itself. Perhaps Lee Smolin's hint that photons and neutrinos are symmetric aspects of the same thing should be taken seriously.

My theory is that bubble chambers measure a ratio of charge to mass and will detect only electron and positron. That leaves 2 out of the 4 types of electron as per Don Hotson undetected.

To spell it out, the positive mass / positive charge A particle is the standard electron while the negative charge C particle is the standard positron. The negative mass variants B and D have yet to be detected directly. This is Model "ABCD".

# The Nature of the AB Quantum

See “Gravity as a Unified Force”, Mark Ridler, Infinite Energy magazine, volume 25, issue 146, 2019, pages 29-39.

Alternatively see ViXra:

<https://vixra.org/abs/1812.0121>

When an A quantum (positive mass, crest of a wave) combines with a B quantum (negative mass, trough of a wave) we get the AB quantum with runaway motion to light speed.

By my reckoning in Model AB (attractive vs repulsive) this is a gravitational wave quantum. Note that this is as far as Hermann Bondi got when he did his seminal analysis on Negative Mass in 1957,

If we generalise to Model ABCD (likes vs opposites) then it would be the equivalent in electromagnetic terms which is light itself.

It certainly has all the characteristics of light itself which are:

1. Characteristic length governed by initial separation
2. Unlikely to be observed at less than light speed
3. Forms an electromagnetic wave (crest followed by trough)
4. Has a long range effect of zero.
5. Has a short-range effect of a gravitational dipole

# 2 Electrons = 1 Photon

This is saying the same thing as The Nature of the AB quantum. Note that one half must be positive and the other half negative.

See:

[The Solar Cell That Turns 1 Photon into 2 Electrons – Scientific American](#)

18 Apr 2013

By my reckoning the second electron here has negative mass.

Either way each time we get 2 electrons of opposite mass then we can expect to get a photon (or a neutrino) according to Model ABCD (likes vs opposites):

- AB
- BC
- CD
- DA

# Conservation

Don Hotson was big on conservation. He despised the destruction operator inherent in electron-positron annihilation, and the creation operator inherent in pair production.

Mark Ridler showed in Model ABCD an alternative way to model the electron such that conservation is maintained. Effectively the 4 roots ABCD are permanent features of the landscape, they just transform into one thing or the other by combination. You just have to count them (and include when they may be hiding in the Cold Dark Matter candidate BD). It is really very easy to run a universe simulation along these lines.

One aspect of conservation is the strict accounting for photons during all processes. The electron is modelled as an A and then an arbitrary number of AB photons. This strict accounting does not allow for short cuts to a defined energy. It remains to be seen whether this is a sustainable aspect of the model.

## The Sea of Negative Energy

This is the one point of difference between Mark Ridler and Don Hotson. In my treatment there is a 50:50 universe where positive states are balanced by negative ones. Unlike the sea of negative energy states advocated by Hotson and Dirac where negative energy dominates.

It remains to be seen whether Jamie Farnes prefers the Mark Ridler or the Don Hotson treatment.

# Contact Me

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