
Using the Meth8 apparatus we evaluate four equations in quantum physics from the above as labeled (3A) and (3B).

\[
\begin{align*}
\text{LET:} & \quad p \psi \ [(\text{spinor}) \ l_c\psi]\; ; \quad q \ (E/c)\; ; \quad r \ \alpha p \; ; \quad s \ \beta mc \ [l_c\beta \ast mc] \; ; \\
& \quad \text{T \ tautology, designated truth value; \ } F \ \text{contradiction}
\end{align*}
\]

Truth tables are four rows shown row-major horizontally.

"[Paul] Dirac ... furthered the application of equation \((E^2)-(pc)^2 = (mc^2)^2\) to the electron ... by various manipulations he factorized the equation into the form:

\[
(E/c - \alpha p - \beta mc) (E/c + \alpha p + \beta mc)\psi = 0 \quad \text{(3.0.1)}
\]

\[
(((q-(r+s))&(q+(r+s)))&p) = (p@p) \quad \text{TTTT TTTT TTTT TTTT} \quad \text{(3.0.2)}
\]

From Eq 3.0.1 the four "roots", "by a deviated approach to Dirac" from [Ettore] Majorana, are in Eq 3.4.1.

\[
E/c - \alpha p + \beta mc)\psi = 0 \; ; \quad \text{of interest to Majorana} \quad \text{(3.1.1)}
\]

\[
((q-(r+s))&p) = (p@p) \quad \text{TTTT TTTT TTTT TTTT} \quad \text{(3.1.2)}
\]

\[
E/c + \alpha p - \beta mc)\psi = 0 \; ; \quad \text{reversing the order of arithmetic in Eq 3.4.1 from -,+ to +,-} \quad \text{(3.2.1)}
\]

\[
(q+(r-s))&p) = (p@p) \quad \text{TTFF TTFF TTFF TTFF} \quad \text{(3.2.2)}
\]

\[
E/c - \alpha p - \beta mc)\psi = 0 \; ; \quad \text{an analogous root directly from Eq 3.0.1} \quad \text{(3.3.1)}
\]

\[
((q-(r-s))&p) = (p@p) \quad \text{TTTT TTTT TTTT TTTT} \quad \text{(3.3.2)}
\]

\[
E/c + \alpha p + \beta mc)\psi = 0 \; ; \quad \text{an analogous root directly from Eq 3.0.1} \quad \text{(3.4.1)}
\]

\[
((q+(r+s))&p) = (p@p) \quad \text{TTTF TTTF TTTF TTTF} \quad \text{(3.4.2)}
\]

The results for Eq 3.0.2 and 3.3.2 are equivalent.

In Eq 3.1.1, 3.2.1, 3.3.1, and 3.4.1, the removal of the literal element \(\psi\) alters the truth table rows, of Eq 3.1.2, 3.2.2, 3.3.2, and 3.4.2, for "TTTT" to read "FFFF", meaning that the results deviate further from tautology.

Eq 3.1.1 of Majorana was the basis for the angel particle named a chiral Majorana fermion. From Eq 3.1.2 Meth8 refutes that as a tautology because of the one value \(F\) in the truth table \(TTTT TTTT TTTT TTTT\).

These results from mathematical logic make the experimental discovery of such a particle suspicious.