Program:

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import sys
from sympy import symbols,sin,cos
from printer import Format,xpdf,Get_Program,Print_Function
from ga import Ga

Format()
coords = symbols('t x y z',real=True)
(st4d,g0,g1,g2,g3) = Ga.build('gamma*t|x|y|z',g=[1,-1,-1,-1],coords=coords)
I = st4d.i

(m,e) = symbols('m e')

psi = st4d.mv('psi','spinor',f=True)
A = st4d.mv('A','vector',f=True)
sig_z = g3*g0

print '\\text{4-Vector Potential\\;\\;}\\bm{A} =',A
print '\\text{8-component real spinor\\;\\;}\\bm{\\psi} =',psi

dirac_eq = (st4d.grad*psi)*I*sig_z-e*A*psi-m*psi*g0
dirac_eq = dirac_eq.simplify()

dirac_eq.Fmt(3,r'%\text{Dirac Equation\;\;}\nabla \bm{\psi}'+\
             r' I \sigma_{z}-e\bm{A}\bm{\psi}-m\bm{\psi}\gamma_{t} = 0')
xpdf(paper='landscape',prog=True)
```

Code Output:

4-Vector Potential $\boldsymbol{A} = A^{t}\boldsymbol{\gamma_{t}} + A^{x}\boldsymbol{\gamma_{x}} + A^{y}\boldsymbol{\gamma_{y}} + A^{z}\boldsymbol{\gamma_{z}}$

8-component real spinor $\boldsymbol{\psi} = \psi + \psi^{tx}\boldsymbol{\gamma_{t}}\wedge\boldsymbol{\gamma_{x}} + \psi^{ty}\boldsymbol{\gamma_{t}}\wedge\boldsymbol{\gamma_{y}} + \psi^{tz}\boldsymbol{\gamma_{t}}\wedge\boldsymbol{\gamma_{z}} + \psi^{xy}\boldsymbol{\gamma_{x}}\wedge\boldsymbol{\gamma_{y}} + \psi^{xz}\boldsymbol{\gamma_{x}}\wedge\boldsymbol{\gamma_{z}} + \psi^{yz}\boldsymbol{\gamma_{y}}\wedge\boldsymbol{\gamma_{z}} + \psi^{txyz}\boldsymbol{\gamma_{t}}\wedge\boldsymbol{\gamma_{x}}\wedge\boldsymbol{\gamma_{y}}\wedge\boldsymbol{\gamma_{z}}$

$$
\begin{aligned}
\text{Dirac Equation}\;\;\nabla\boldsymbol{\psi}I\sigma_{z} - e\boldsymbol{A}\boldsymbol{\psi} - m\boldsymbol{\psi}\gamma_{t} = 0 = & \left(-eA^{t}\psi - eA^{x}\psi^{tx} - eA^{y}\psi^{ty} - eA^{z}\psi^{tz} - m\psi - \partial_{y}\psi^{tx} - \partial_{z}\psi^{txyz} + \partial_{x}\psi^{ty} + \partial_{t}\psi^{xy}\right)\boldsymbol{\gamma_{t}} \\
& + \left(-eA^{t}\psi^{tx} - eA^{x}\psi - eA^{y}\psi^{xy} - eA^{z}\psi^{xz} + m\psi^{tx} + \partial_{y}\psi - \partial_{t}\psi^{ty} - \partial_{x}\psi^{xy} + \partial_{z}\psi^{yz}\right)\boldsymbol{\gamma_{x}} \\
& + \left(eA^{x}\psi^{xy} - eA^{y}\psi - eA^{z}\psi^{yz} + \left(-eA^{t} + m\right)\psi^{ty} - \partial_{x}\psi + \partial_{t}\psi^{tx} - \partial_{y}\psi^{xy} - \partial_{z}\psi^{xz}\right)\boldsymbol{\gamma_{y}} \\
& + \left(eA^{x}\psi^{xz} + eA^{y}\psi^{yz} - eA^{z}\psi + \left(-eA^{t} + m\right)\psi^{tz} + \partial_{t}\psi^{txyz} - \partial_{z}\psi^{xy} + \partial_{y}\psi^{xz} - \partial_{x}\psi^{yz}\right)\boldsymbol{\gamma_{z}} \\
& + \left(eA^{x}\psi^{ty} - eA^{y}\psi^{tx} - eA^{z}\psi^{txyz} + \left(-eA^{t} - m\right)\psi^{xy} - \partial_{t}\psi + \partial_{x}\psi^{tx} + \partial_{y}\psi^{ty} + \partial_{z}\psi^{tz}\right)\boldsymbol{\gamma_{t}}\wedge\boldsymbol{\gamma_{x}}\wedge\boldsymbol{\gamma_{y}} \\
& + \left(-eA^{t}\psi^{xz} + eA^{x}\psi^{tz} + eA^{y}\psi^{txyz} - eA^{z}\psi^{tx} - m\psi^{xz} + \partial_{x}\psi^{txyz} + \partial_{z}\psi^{ty} - \partial_{y}\psi^{tz} - \partial_{t}\psi^{yz}\right)\boldsymbol{\gamma_{t}}\wedge\boldsymbol{\gamma_{x}}\wedge\boldsymbol{\gamma_{z}} \\
& + \left(-eA^{t}\psi^{yz} - eA^{x}\psi^{txyz} + eA^{y}\psi^{tz} - eA^{z}\psi^{ty} - m\psi^{yz} - \partial_{z}\psi^{tx} + \partial_{y}\psi^{txyz} + \partial_{x}\psi^{tz} + \partial_{t}\psi^{xz}\right)\boldsymbol{\gamma_{t}}\wedge\boldsymbol{\gamma_{y}}\wedge\boldsymbol{\gamma_{z}} \\
& + \left(-eA^{t}\psi^{txyz} - eA^{x}\psi^{yz} + eA^{y}\psi^{xz} - eA^{z}\psi^{xy} + m\psi^{txyz} + \partial_{z}\psi - \partial_{t}\psi^{tz} - \partial_{x}\psi^{xz} - \partial_{y}\psi^{yz}\right)\boldsymbol{\gamma_{x}}\wedge\boldsymbol{\gamma_{y}}\wedge\boldsymbol{\gamma_{z}}
\end{aligned}
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