

1 -----BEGIN PGP SIGNED MESSAGE-----
2 Hash: SHA1
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4 Roger Voss June 17, 2003 10:16:04 PM
5
6 Negative Mass Particles
7
8 Under Einstein's theory of gravity, the gravity force acts on both
9 mass and energy. Hence Einstein predicted correctly that light would
10 follow a curved path if it passed nearby the sun. Now all the forms of
11 energy and mass that are readily observable are regarded as positive -
12 as in positive energy, etc. The gravity force is attractive and is too
13 regarded as positive gravity.
14
15 However, in physics there is also the concept of negative energy. An
16 article published in the January 2000 issue of Scientific American
17 titled Negative Energy, Wormholes and Warp Drive by Lawrence H. Ford
18 and Thomas A. Roman pretty well framed the understanding of negative
19 energy.
20
21 According to Heisenberg's uncertainty principle even the vacuum is in
22 constant fluctuation. Due to this constant undulation it fluctuates
23 into a state of less than zero energy as well as greater. The Casimir
24 experiment of two uncharged plates separated by a slight gap lends
25 indirect evidence of vacuum negative energy. The two plates attract
26 each other measurably due to how they alter the vacuum in the thin
27 region of vacuum space between them. The authors also site the
28 "Squeezed Light" experiment using special nonlinear optics where the
29 photons create alternating regions of negative and positive energy.
30
31 The authors go on to discuss such standard Star Trek paraphernalia as
32 worm holes and warp drives. These could exist in theory if sufficient
33 negative energy is applied (negative energy is gravitationally
34 repulsive and would keep a worm hole throat from collapsing, for
35 instance).
36
37 In the end the problem is that the only negative energy that appears
38 to be around to tap is from the vacuum. However, there is a hard
39 conservation rule in that attenuating negative energy from the vacuum
40 will give rise to a corresponding positive energy. It's just not
41 feasible to pump limitless negative energy from the vacuum or even a
42 smigen of enough to do something useful.
43
44 But what if there existed negative mass as well as negative energy?
45 What if there were such thing as negative mass particles (not to be
46 confused with the negative electric charge of the electron particle)?
47 Just as negative energy, negative mass particles would be
48 gravitationally repulsive.
49
50 We certainly don't see such negative mass particles running around in
51 the wild, so to speak. Collisions in particle accelerators do not give
52 rise to such negative mass particles. However, the vast majority of
53 particles are actually tightly locked up inside protons and neutrons
54 and have been since the Big Bang cooled enough for these particles to
55 form. Protons and neutrons are believed to each consist of an
56 arrangement of three quarks. Protons always have two "up" quarks and
57 one "down" quark, while neutrons have two "down" quarks and an "up"
58 quark. Gluons are the Strong force carrier responsible for the binding
59 force that confines these color-charged quark particles so as to form
60 hadrons, such as protons, neutrons and pions.
61
62 Obviously it is assumed in physics that all these quarks that comprise
63 protons and neutrons are themselves positive mass particles
64 (gravitationally attractive). But we really only witness their
65 positive mass in terms of the net whole. What if two quarks were of
66 positive mass and a third were negative mass? The net result from
67 canceling out the negative mass quark would still on balance be a
68 positive mass for the proton and neutron hadrons.
69
70 - From the very formation of the universe, as the hot quark seething
71 broth cooled into protons and neutrons, the negative mass quark

72 particle would become tucked away for the remainder of the lifetime of
73 the universe - where it is bound securely by the Strong force of gluon
74 exchange. Only its cousin, the negative energy of the vacuum
75 fluctuation, would be left as a rather unpromising candidate as a
76 source for a repulsive gravity effect.

77
78 The interesting thing about such an arrangement of three quarks is
79 that the negative mass quark will be sticking off in a corner of the
80 assemblage. As protons and neutrons normally bounce and spin around
81 randomly this is of no consequence. Yet what if the protons and
82 neutrons were well synchronized like soldiers standing in formation?
83 What if the vertex of the negative mass quark became "coherent" with
84 its brethren in nearby protons and neutrons? What if the resonating
85 crystalline molecular structure of bulk objects became coherent in
86 such manner? As spin coherency in magnetization gives rise to a
87 dramatic and visceral magnetic field, could a repulsive gravity effect
88 exhibit due to a coherency of inner quark structure and force
89 characteristic?

90
91 - From the 800 ton each Trilithon blocks found in the ancient ruins of
92 the Balbeck platform in Lebanon to the 30 ton cut blocks manipulated
93 by Edward Leedskalnin of more recent times, there is dramatic physical
94 evidence in the world that points to gravitationally repulsive matter
95 and the possibility of mastering it for constructive purpose.

96
97 Reference Link:

98
99 Negative Energy, Wormholes and Warp Drive
100 Lawrence H. Ford and Thomas A. Roman
101 Scientific American, January 2000
102 <http://www.physics.hku.hk/~tboyce/sf/topics/wormhole/wormhole.html>

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