An 8th HCE8S Flow Diagram Improving the Z(4430) Tetraquark connection

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Abstract: A forward-time, reverse-time energy cycle of the 8th cycle of an HCE8S universe for a full loop of the cycle is shown incorporating the Z(4430) tetraquark in an improved way

Using findings taken from previous notes[1,2], I will show the latest time-energy flow chart for the 8th cycle of an HCE8S universe using Z(4430) tetraquarks in an improved manner:

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TR time reverse  QU quantum of the universe  TF time forward
Unbroken E8 symmetry       Broken, Holographic E8 symmetry
LElife energy BEbinding energy DMdark matter DEdark energy
ttH +ttZ +tH +tZ fermibosons +4 antifermibosons
 = 1330.88 GeV /galaxy-sec          TF/galaxy-sec=4(H – Z) = 4QU
                  || 1332.10 – 1330. 88 = 1.22 GeV                    |
 *TF energy in>{1332.10 GeV/ sec-galaxy }>TF energy out     |
 ^ = 1.0447865 x 1275 =1332.10GeV   DM-4H  DM-4Z DE12t |
  ^TR (c + anti-c)= 1275 GeV energy       |  super-      |     |     |
  ^TR 1000 Z(4430) disrupted              |  massive    |     |     |
 ^ TR Z(4430) arrives near galaxy SMBH| black hole  |     |     |
   (super massive black hole)             |   Higgs       |     |     |
   TR 1000 Z(4430) disrupted,             |  cancel       |     |     |
   TR up, down quarks supplied to         |  ^+ 4H        |     |     |
   TR hadronization matter factory     4(H-Z) = 4QU <  |  < | <  *
   (see text). neutrons, protons produced     DM = - 8Z |     |
 * TR s quark = 95MeV= 94+e, anti-e MeV for factory |     |
^u quark= 2.3 MeV x 2. (2u + 1d)x100=TF (940MeV) |     |
^d quark= 4.8 MeV x 1.       TF (940-e-8)=932-0.511  |     |
 ^Neutron 940 MeV(d= 3.55).  Proton 931.489 MeV @    @
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^ TR Z(4430) tetraquark (seen, like tau neutrino) @ @
^ TR Z(4430)/$(1.022148)^{1/2}$/TR tau neutrino -8Z DE QU
|^ TR tau neutrino =282.6- 6 x 2 = 270.6 | | |
^ 15.5 MeV >> >> * | (see text) | | |
^ TR muon neutrino X100 = 1550 MeV TR | | |
^ 0.17 MeV TR > TF x $(1.022148)^2$ =1.0447865 | | |
^ =1619.42 MeV TF | | |
^TR electron neutrino +157.42 MeV LE | | |
^ 2.2 x 10^-6 MeV TF = 1776.84 MeV | | |
^ (1.022 electron mass factor) = tau lepton | | |
^ TF + proton BE 103.16 MeV | | |
X2 numerically TF = 1880 MeV | | |
star<atom<proton, anti-proton pair (940 x 2 MeV) | | |
^ << << << << << * | |
TR 12X(numeric) top quark DE 171.7 GeV << << * |
Big Bang DE becomes visible TF energy |
10X(num.) 171.7 GeV 2X(num.) 171.7 GeV |
TF Metric space TF space communication |
Expan + 7/1000 x QU = 0.23667 GeV TF |
sion | TF 33.81238 GeV QU < |
| 6 QU/1000 color black only 1/32 = 1.0566368 GeV |
| 1 QU/1000 color (QCD type) x 1/100 = muon lepton |
| TF universe communication < = 105.658366 MeV TF |
*TF universe (1.0000503 ratio) |
t /b = 171.7/4.180 = TF 33.81238 GeV x 1/8 x QU < |
41.076555 = 4.22655/$(1.022148)^{1/2}$ |
TR bottom quark b = 4.180 GeV = TR 4.18051 GeV |
keep 4 digits (1.000122 ratio) |
TF 270.49 GeV=33.81238 x 8 = 8 x QU < *

TF (LE + BE +20x(e, anti-e)) = 157.42 + 103.16 + 10.22 = 270.8 MeV. Also 270.49 x 16 = 4328 and the mc^2 of just one Z(4430) tetraquark /1.022148 = 4334.01 (end of last.universe cycle). 4334-4328 = 6 (signal indicating number of quarks).
neutron 940 MeV, u/d= 2.3/3.55=0.64788 million yrs

This flow diagram does not require two types of Z(4430) tetraquark; just one (c, anti-c, d, anti-u) will do. The anti-u is utilized along with the d component to supply d and u quarks to the TR hadronizing factories of the universe to supply protons and neutrons to build atoms and finally stars. The anti-u are not normal antiparticles, which do not appear in our broken-symmetry epoch but rather are dark matter, which can occur in our epoch. Thus TR u quarks can and do appear, fed from the TR tau neutrino which is twice as prolific as normal. The net result is the u quarks occur twice for every proton. They also stay the same mass between occurring in protons and neutrons (2.3 MeV), whereas d quarks change mass (4.8 to 3.55 MeV).

For the neutrons, they do not appear in the HCE8S universe until later, being supplied entirely by actions within stars. This must be so because how would you otherwise explain the large mass of a neutronic d,d,u entity built of protonic components? The environment must be hot enough to reduce the masses of d quarks. Also free neutrons are exceedingly damaging to life and would not be favored by E8 symmetry. As indicated on the diagram, the neutron u/d mass ratio is 0.6478 million years versus 0.4791 million years for the proton so deuterium came later, as expected but not by much (you have to believe ? on this).

The flow diagram has been improved in discussing the reason for the s quark (as a means to energize the hadronization process). The very good predictions now possible for the proton and neutron mc^2 values using HCE8S theory are also stressed on the diagram. For the proton 931.49415 present value/931.489 my calculation = 1.0000055. For the neutron 940 million years value/939.565413 present value = 1.0004625. The reason for the need for 8 to be subtracted from the proton mass is probably to insure that the proton is lower in mass than the neutron. Eight is almost E8's signature and life itself!

As also is shown on the diagram, Z(4430) tetraquarks seem to come as a result of natural TR tau neutrino development torward heavier type entities. Evidence for this is shown by experiments done on electron, muon, and tauon neutrons. That 4430 MeV is nature's intended mass for this tetraquark is evident from the fact that QU(33.81238) x 8 = 270.5 versus 270.6 using the Z(4430)/(15.5) tau neutrino dimensionless mass ratio ((see diagram for higher precision).

I have extra space so I would like to mention the great attention my late friend and co-worker at Los Alamos professor Val H. Fitch paid to the Z(4430) tetraquark. He considered its importance to be paramount, especially because of its prolificity, although he was given very little support on this and it remains a backwater for research even today. I hope my work will speed things up here.

1. George R. Briggs, “An HCE8S flow diagram incorporating the latest ideas ”, ViXra 1806.0056, (2018)

2. George R. Briggs, "The connection between HCE8S theory and the Z(4430) tetraquark”, ViXra 1806.0135, (2018).