Calculating the Mass of the Neutron in a Better Way With HCE8S Theory

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Abstract: Calculation of the mass of the neutron can be done accurately utilizing only the mass of the Z(4430) tetraquark together with an understood factor and another not understood but smaller factor the neutron has in common with the proton

Firstly, in preparing my last note[1] for HCE8S theory, I made a wrong turn in correcting the mass of the neutron. The age of the universe was slightly altered whereas it should not have been changed; rather the small multiplier factor 1.0000055 needed for the proton[2] should also have been introduced for the neutron, but as a divisor.

We will start again.The Z(4430)tetraquark/$(13.799/13.5)^2$ = 4430/(1.0447865) = 4240.1007/15.5 = 273.55488, the dimensionless constant with the original 13.799 billion year age of the universe. This constant is next broken down into 3.55488 x 2 =7.10488+ 2.3 -0.00976 = 7.10488 + 2.29024 = 9.3957. Now 100X this number is 939.570 which is 0.005 high compared to the measured[3] mass of the neutron (939.5654133 MeV). We now divide by 1.0000055 and get 939.570/1.0000055 = 939.56483. This ratio (1.0000006) is less than I found in my last note (1.0000053). In fact the 6 is even of significance; it is notifaction by Nature of the 6 quark types of 4 digits mass or less that our universe nearly contains (the top quark may not be of 4 digits yet).

Some discussion of why the procedure I use gives an apparently accurate value for the mass of the neutron is called

for. The neutron has 2 down quarks and 1 up quark: the increase in mass in MeV of each down quark is signalled by the 0.488 part of the dimensionless number (X100) while the decrease in mass of the up quark is signalled by 230 - (2 x 488), as expected.

Since the calculated quark mass components of the neutron have 6 bits each, this means that the neutron's constituent quarks and therefore the neutron itself could not have been born earlier than the 8th cyclic universe, whereas the proton's quarks were both only of 2 digits; signalling that the protons are older.

We see a trend here; broken E8 symmetry when the entity formed means that 6-digit mass values (or more) are needed, unbroken symmetry indicates 4-digit values (or fewer) suffice, dependent on which cyclic universe the particle was born in.

Why does the small dimensionless constant 1.0000055 = 939.570/939.56483 arise?, and only in connection with the neutron and proton in an opposite way? I can venture a guess: It is Nature's signal indicating the masses of the building blocks of matter in the universe, like Nature's signal 273.55488 for the masses of the neutron's quarks.

1. George R. Briggs,"Still further improvement of the accuracy of HCE8S theory: the neutron and Z boson masses and more", ViXra 1807.0525, (2018).

2. George R. Briggs,"An 8th HCE8S flow diagram improving the Z(4430) tetraquark connection", ViXra 1806.0465, (2018).

3. "Neutron", Wikipedia, (2018)