Improvement of the Accuracy of HCE8S Theory Thanks to the Z(4430) Tetraquark

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Abstract: Due to a mistake on the HCE8S flow diagram the accuracy of the neutron mass was less than it should have been. Correction of this error leads to both u_n and d_n mass changes for neutronic quarks.

In preparing my last flow diagram[1] for HCE8S theory, I made a mistake at the top of the second page. It should read $Z(4430)/(1.0221480)^2$ =4430/1.0447865= 4240.1007/15.5 tau neutrino= 273.55488. Taking 3.55488 as the mass of the d_n quark and 0.00488 x 2 = 0.00976 subracted from 2.3 (mass of the u_p quark), one also gets 2.29024 for the mass of the u_n quark. For $2d_n$ we have 7.10976, and the mass of the neutron is 939.9946. For u_n/d_n we have 2.29024/3.55488 =0.64425 million years (not much different than before) and for 940/939.9946 = 1.0000057. This is almost the same number we got for protons (1.0000055) rather than 1.0004625 found before (see my last note).

Note that TF was active when the neutron came into existence (E8 symmetry was broken), so 4-digit mass simplication cannot be used for u_n,d_n quarks as it can for the other quarks. As for protons, their 6-digit values seem to be needed indicating they formed at or later than the big bang but not later than re-ionization (at which time the charged protons must have existed).

We see a trend here; broken E8 symmetry when the entity formed means that 6-digit mass values are needed, unbroken symmetry indicates 4-digit values (or less) suffice.

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