The Mass of the Neutron Reviewed: The Role of Two New Quarks Rather Than One

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Abstract: Reviewing my quite recent work concerning the mass of the neutron, it is becoming evident that both the up and the down quark of the neutron have been revised: both have been slightly altered in mass to accurately produce the observed mass of the neutron. This means that 8 quark types exist instead of 6, as expected for E8 symmetry.

To fully understand my most recent flow diagram, I carefully reviewed how the accurate mass of the neutron was calculated. This mass was 939.57 MeV, and after dividing by 1.0000055 to get 939.56483 it is accurate to within 1.0000006 to the neutron's measured mc^2 of 939.56541 MeV.

The calculation (amazingly!) starts with the mass of the Z(4430) tetraquark. The 4430 MeV tetraquark mc^2 is first divided by the ratio (age of the universe now/age of the universe at the end of the last cycle)^2 (signal that holography is involved) = 4430 / (13.799/13.5)^2 = 4430/1.0447865 = 4240.1007 MeV. This corrected value of mass is then divided by the mc^2 mass of the tau neutrino (15.5 MeV) to find one of nature's most useful dimensionless ratios; 273.55488. The number 27 signals the 10^27 galaxies of our universe and can be ignored for this work.

Taking the remaining signal 3.55488, we split off 3.55, which is a signal of the existence of one or several new quarks. The remaining 0.00488 we use (XMeV) to either increase or decrease the mc^2 of the up quark u_n or the down quark d_n for
the neutron. We first try $4.8 + 0.00488 = u_n$ and $2.3 + 0.00488 = d_n$: the sum of one up quark and two down quarks $= 4.80488 + 2 \times 2.30488 = 4.80488 + 4.60976 = 9.41464$ (too large).

We next try $4.80488 + 2 \times 2.29512 = 4.80488 + 4.59024 = 9.39512 = \textbf{9.395 correct to 4 digits for the } mc^2 \text{ of the neutron.}$

We next try $4.79512 + 2 \times 2.30488 = 4.79512 + 4.60976 = 9.40488$ (too large).

We finally try $4.79512 + 2 \times 2.29512 = 4.79512 + 4.59024 = 9.38536$ (too small).

We next alter the hypothetical mass 939.57 Mev slightly to 939.56. Now we multiply rather than divide by $1.0000055$ to get 939.56516 and now $\textbf{939.56541/939.56516} = 1.0000002$ (extremely close agreement). Next we set up the equation $9.3956 = 4.8+0.00Y+(2x2.3)-0.002Y$ and solve for $Y$. We get $Y = 440$ and the dimensionless number becomes 273.55440.

We note also that the accurate\(^3\) calculation of the mass of the proton uses the same dimensionless multiplier $1.0000055$ as the neutron. This may be a signal of new physics or just another signal (together with the often-used dimensionless constant $1.0000155$) for the holographically important $\frac{1}{3} \sim \frac{1.0000055}{1.0000155}$.

This review has revealed several mistakes in the neutron story which I have now attempted to correct.

