The Most Accurate Method of Neutron Mass Calculation

George R. Briggs

Abstract: The mass of the neutron can be calculated simply yet accurately in MHCE8S theory by a method I outline in this note.

I used the constant 273.55488 to quite accurately calculate the masses of two new up and down quarks for the neutron in an earlier paper[1]. In that work I obtained 4-digit accuracy for the mass of the neutron of **939.5 MeV.** Now I try to do better: first taking the 940 MeV starting mc^2 for the proton minus 0.511 MeV for the unused electron of the neutron, 940 - 0.511 = 939.489. Next I add 10^-4 x (2 x 355 = 710 MeV: the mc^2 of two $\mathbf{d_n}$ quarks already available as the 1st new quarks) to get 939.489 + 0.071 = 939.56 MeV. The new quark energy goes to the $\mathbf{u_n}$ quark and forms the 2nd new quark (the 3.55 MeV $\mathbf{d_n}$ was the 1st). Now 100X the mass of the new $\mathbf{u_n}$ quark is 230 + 0.071 - 0.511 = 229.56 MeV, and 200 x $\mathbf{d_n}$ + 100 x $\mathbf{u_n}$ = 710 + 229.56 = **939.56** MeV is the energy of the neutron formed from these two new type quarks in the universe (making 8 in all and meaning that E8 symmetry rules).n

Now **939.56541 MeV** is the known mc^2 of the neutron: dividing by **1.0000055** as we did for the proton, we get **939.56024;** this divided by **939.56** = 1.0000002, a very close match and better than any match I did for the neutron before. The 4-digit match is **939.5***6541* and I see no date. For the proton the number is **931.4***9415,* and I also see no date.

1. George R. Briggs,"The mass of the neutron reviewed: the role of two new quarks instead of one", ViXra 1902.0498, (2019)