Calculation of Kaon and Pion Masses by Q-theory

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Abstract In previous study, the shapes of proton and neutron were drawn, and their masses were calculated by Q-theory. Proton of 938.3 MeV is composed of two up quarks of 2.251 MeV, one down quark of 4.760 MeV, one strong particle force of 42.78 keV and 1.0150 times dark force, and one electromagnetic particle force of 920.6 eV and 1.1116 times dark force. The strong particle force holds the two up quarks. Because of this, when proton collides, the down quark falls off from proton. This is K-meson, and its mass was calculated as 495.05 MeV which is similar to the average of K± 493.67 MeV and K0 497.65 MeV. Since the structure is unstable, the strong particle force oscillates dimensionally. This is π-meson, and its mass was calculated as 137.79 MeV which is similar to the average of π0 134.98 MeV and π± 139.57 MeV. Finally, the electromagnetic particle force also becomes unstable, so it collapses.

1. Introduction

In this study, the shapes of K-meson and π-meson were drawn, and their masses were calculated. The key point is that particle mass must be calculated as logarithmic values. For example, the combination of 3 eV and 4 eV in quantum space is not 7 eV but 12 eV.

2. K-meson, π-meson, Etc.

2.1 Preceding calculations

The preceding data for the calculation of Fig. 1 and Table 2 are presented in Table 1.

Table 1 Preceding calculations. See Ref. 1

Particle	eV	log	Page	Object
Proton	given		36	Fig. 1
Up	2.251M	6.3524	33	Table 1
Down	4.760M	6.6776	42	Table 1
Strange	93.51M	7.9709	42	Table 1
Strong particle force	42.15k	4.6248	25	Table 1
Oscillating s. p. f.	909.0	2.9586		See 2.7
Electr. particle force	828.1	2.9181	25	Table 1
Strong dark force	-	0.0065	26	Fig. 3(a)
Electr. dark force	-	0.0460	26	Fig. 3(a)
5D dark force	-	0.0395	26	Fig. 3(b)
Oscillation of strong particle force			20	Fig. 1(d)
See the right middle of Fig. 1			21	Fig. 2(b,d)
Neutron	given		38	Fig. 3
H boson	125.059G		4	Fig. 5(b)

2.2 Case 0) Proton

The shape of proton is drawn at Case 0) of Fig. 1, and its mass is calculated at Case 0) of Table 2. The inside is composed of blue two up quarks, red one down quark, and green one strong particle force, and the average mass is calculated as 6.0018. Its dark force of 0.0065 acts on the strong particle force. Orange electromagnetic particle force of 2.9181 binds them together. Its dark force of 0.0460 acts on the electromagnetic particle force. Therefore, the summation of them is calculated as 938.27 MeV.

2.3 Case 1) up + Strange

When the proton of Case 0) collides, it is obvious that something in proton will fall off. Let's assume that the blue one up quark and the α_n^{456} of red down quark in Case 0) are separated such as Case 1). Then, the red down quark is changed to orange strange quark in Case 1). The mass of K-meson is 493.67 MeV. In Table 2, 491.61 MeV which is the closest to the K-meson mass was calculated. However, both the figure and the calculation cannot be incomprehensible.

2.4 Case 2) Down + Strange

Let's assume that the blue one up quark and α_n^{456} of red down quark in Case 0) are separated and the blue one up quark in Case 0) is changed to the red down quark such as Case 2). In Table 2, 495.01 MeV which is the closest to the K-meson mass was calculated. However, both the figure and the calculation cannot be incomprehensible.

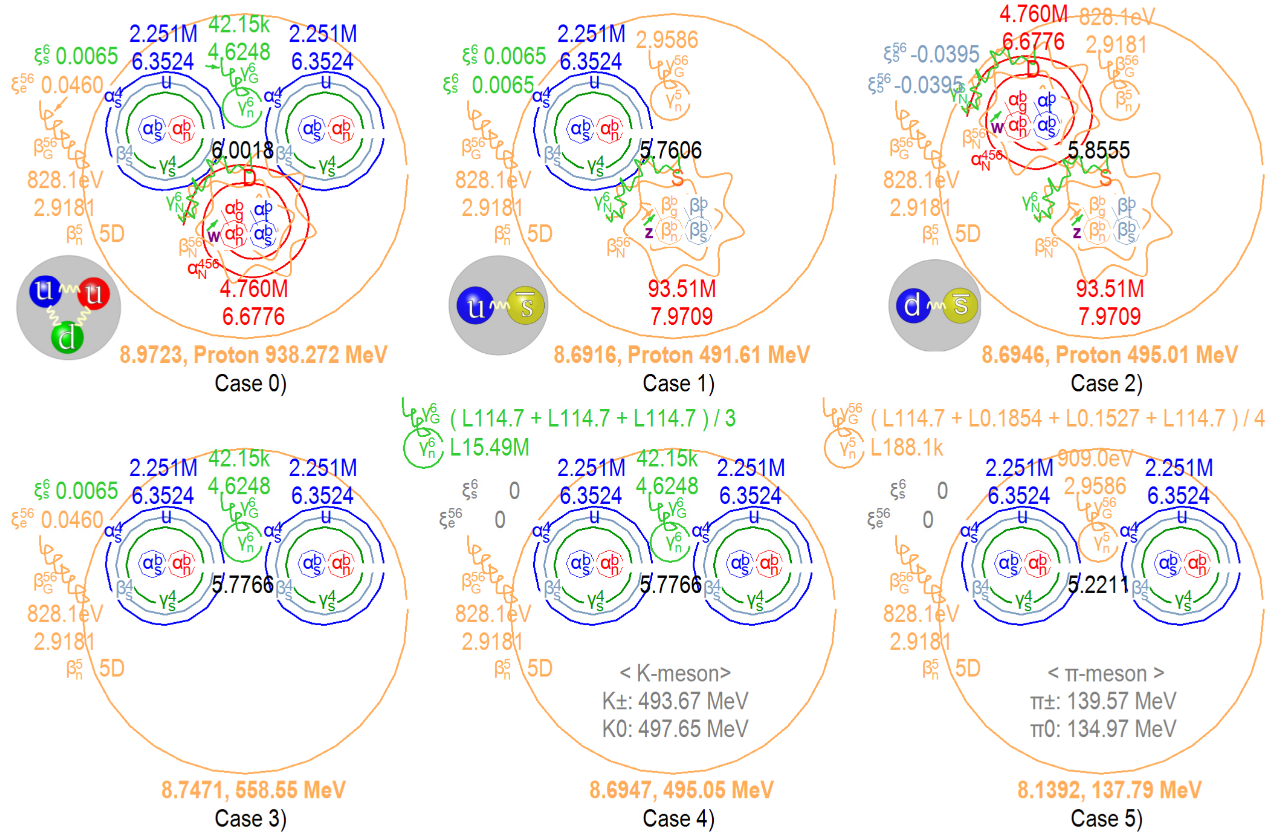

Fig. 1 Shapes of K-meson and π-meson

2.5 Case 3) up + up

In proton of Case 1), the green (red series) strong particle force holds the two blue up quarks and pushes away the red down quark. Here, the blue up quarks and the red down quark are holding each other. Therefore, when proton collides, the red down quark having weak combination falls off from proton. In Table 2, the mass of Case 3) was calculated as 558.55 MeV. In Fig. 1, it is very reasonable that Case 0) changes to Case 3), but the mass was calculated incorrectly.

2.6 Case 4) K-meson 495.05 MeV

In Table 2, if the dark forces are removed, the mass of Case 4) was calculated as 495.05 MeV. This value is similar to the average of $K^{\pm}$ 493.67 MeV and K_0 497.65 MeV.

2.7 Oscillation of strong particle force

Table 2 Mass calculation of Kaon and Pion. Where, $K^{\pm}$ 493.67, K_0 497.65, $\pi^{\pm}$ 139.57, π_0 134.98 MeV

Term	Case 0)	Case 1)	Case 2)	Case 3)	Case 4)	Case 5)
Particle	Proton	uS	DS	uu	K-meson	π-meson
Quark 1	u 6.3524	u 6.3524	D 6.6776	u 6.3524	u 6.3524	u 6.3524
Quark 2	u 6.3524	-	-	u 6.3524	u 6.3524	u 6.3524
Quark 3	D 6.6776	S 7.9709	S 7.9709	-	-	-
Glue force	γ_{nG}^{6} 4.6248	γ_{nG}^{56} 2.9586	β_{nG}^{56} 2.9181	γ_{nG}^{6} 4.6248	γ_{nG}^{6} 4.6248	γ_{nG}^{56} 2.9586
Average	6.0018	5.7606	5.8555	5.7766	5.7766	5.2211
Glue dark force	ξ_{s}^{6} 0.0065	ξ_{s}^{6} 0.0065	$-\xi_5$ -0.0395	ξ_{s}^{6} 0.0065	-	-
Binding force	β_{nG}^{56} 2.9181	β_{nG}^{56} 2.9181	β_{nG}^{56} 2.9181	β_{nG}^{56} 2.9181	β_{nG}^{56} 2.9181	β_{nG}^{56} 2.9181
Binding dark force	ξ_{e}^{56} 0.0460	ξ_{s}^{6} 0.0065	$-\xi_5$ -0.0395	ξ_{e}^{56} 0.0460	-	-
Σ	8.9723	8.6916	8.6946	8.7471	8.6947	8.1392
eV	938.27M	491.61M	495.01M	558.55M	495.05M	137.79M

The strong particle force in the unstable Case4) experiences an oscillation similar to electromagnetic particle force.

In Fig. 1(d) of pp. 20 of Ref. 1, the tau neutrino inside of stable strong particle force is located on 6D and has the mass of 15.494 MeV. When it becomes unstable, the mass of tau neutrino changes into 188.1 keV (5.2744) similar to the muon neutrino of 170.0 keV on 5D.

In Fig. 2(b,c,d) of pp. 21 of Ref. 1, the gluon inside of stable strong particle force is located on 6D and oscillates at 114.7 eV in (b), 114.7 eV in (c), and 114.7 eV in (d). Therefore, its average value is 114.7 eV. When it becomes unstable, the gluon oscillates similar to the photon on 5D. Therefore, the average mass of 114.7 eV (2.0595) in (b), 0.1527 eV (-0.8160) in (b), 114.7 eV (2.0595) in (d), and 0.1854 eV (-0.7319) in (d) is calculated as 4.393 eV (0.6428).

Therefore, when the strong particle force becomes unstable, its mass changes into 909.0 eV (γ_{nG}^{56} 2.9586) which is the average of 188.1 keV (5.2744) and 4.393 eV (0.6428).

2.8 Case 5) π-meson 137.79 MeV

Since Case 4) is unstable, the green force located in 6D oscillates between 5D and 6D. The mass of Case 5) was calculated as 137.79 MeV. This value is similar to the average of π_0 134.98 MeV and $\pi^{\pm}$ 139.57 MeV.

2.9 Collapse of π-meson

In Case 5), the oscillating strong particle force falls out. Therefore, it eventually collapses.

2.10 Three generation dark energies

In Fig. 3(a) of pp. 26 of Ref. 1, weak dark force is 2.692 (10^0.4301), which is the ratio of dark energy 72.92% to dark matter 27.08% inside of the universe. Electromagnetic dark force is 0.0460, and strong dark force is 0.0065. This means that there are also three generation dark energies. What is 0.0065 and 0.0460?

2.11 Action of dark force

Dark force acts in Case 0), but it does not act in Cases 4) and 5). It can be understood that dark forces act on not unstable but stable particle. What is the reason?

2.12 Collision of neutron

In Fig. 3 of pp. 38 of Ref. 1, Neutron is composed of one proton, one electron, and one origin brane. When neutron collides, the origin brane is destroyed, and various neutrinos and gravinos are generated.

2.13 Correct measurement

The masses of K-meson and π-meson must be measured from the collision of not neutron but proton.

Table 3 Generation of various particles

Particle	Quarks	MeV
Δ	uuu uud udd ddd	1232.0 1232.0 1232.0 1232.0
Λ	uds udc udb udt	1115.7 2286.5 5620.2 ?
Σ	uus uds dds	1189.4 1192.6 1197.4
Σc	uuc udc ddc	2454.0 2452.9 2453.8
Σb	uub udb ddb	5810.5 ? 5815.2
Ξ	uss dss uss dss	1314.7 1321.7 1531.8 1535.0
Ξc	usc dsc usc dsc	2467.9 2471.0 2575.7 2578.0
Ξcc	ucc dcc	3621.4 3518.9
Ξb	usb dsb dsb dsb	5792.0 5792.9 5935.0 5955.3
Ω	sss ssc ssb	1672.5 2697.5 6054.4
ρ	$u\bar{d}$	775.4 775.5
η		547.9 957.8
ηb	$b\bar{b}$	9388.9
ϕ	$s\bar{s}$	1019.5
J/ψ	$c\bar{c}$	3096.9
ω		782.7
Υ	$b\bar{b}$	9460.3
B	$u\bar{b}$ $d\bar{b}$ $s\bar{b}$ $c\bar{b}$	5279.3 5279.7 5366.9 6274.9
D	$c\bar{d}$ $c\bar{u}$ $c\bar{s}$	1869.6 1864.8 1968.5
D*	$c\bar{d}$ $c\bar{u}$	2010.3 2007.0

2.14 Left H boson and right H boson

In Fig. 1 of pp. 1 of Ref. 1, H boson mass is measured as left 123.5 GeV and right 126.5 GeV. Therefore, H boson is determined as 125 GeV of average. It is judged that this phenomenon also appears in K-meson and π-meson.

2.15 Generation of various particles

Particles are destroyed in particle accelerator, and various particles are poured out. The various particles naturally combine to make proton. However, the instantaneous particles are mostly generated such as Table 3.

2.16 Mass calculation of various particles

From the inference of Fig. 1 and Table 2, we tried to calculate the mass of Table 3, but nothing was found at present. There must be something missing in the inference.

3. Conclusions

The mass of K-meson was calculated as 495.05 MeV, and this value is similar to the average of $K^{\pm}$ 493.67 MeV and K_0 497.65 MeV. The mass of π-meson was calculated as 137.79 MeV, and this value is similar to the average of π_0 134.98 MeV and $\pi^{\pm}$ 139.57 MeV. It is judged that the values are correct up to 4 significant digits.

References

[1] D. Kim, 2021, Theory of Everything and Logarithmic Elliptic Equation, https://vixra.org/abs/2110.0023