Research Institute for Fundamental Physics
Kyoto University

素粒子基礎理論討論会

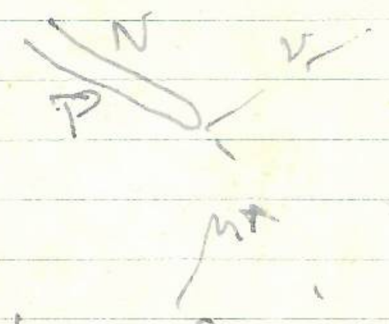
56年度 第3回 例会　　　April 11, 1956

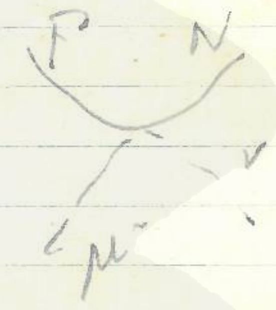
(1)

1. 宮川. 菱林; 坂田模型のもつともらしさ

$\overset{(P,\bar{N})}{\pi} \to \mu + \nu$

$\mu^- + P \to N + \nu$　　↑ G





$\frac{1}{\tau} = G^2 \left(\frac{Mc}{\hbar}\right)^3 \left(\frac{m_\pi c}{\hbar}\right)^3 \frac{1}{(m_\pi c^2)^2} \cdot \frac{m_\pi c^2}{\hbar}$　　$[G] = cm^3\,erg$

$G = 2.5 \times 10^{-49}$

$\tau \simeq 2.2 \times 10^{-12}$ sec

$G\,(\bar{\psi} O \psi)(\bar{\psi}_\mu O \psi_\nu)$

$\varphi_{\mu s}$

$\varphi(\vec{r}) = \psi_{^1S_0}(0) \frac{1}{\sqrt{\Omega}} e^{ikr}$

$\psi_{^1S_0}(0) = 1.2\left(\frac{Mc}{\hbar}\right)^{3/2}$

$\tau \simeq 7 \times 10^{-13}$ sec

$\to G_{obs} = 1.2 \times 10^{-51}$

$26Mc^2$ → Fermi-Yang

$\psi_{^1S_0}(0) \simeq 0.013\left(\frac{Mc}{\hbar}\right)^{3/2}$

$\tau \sim 10^{-9}$ sec

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$\Lambda^0 \to \pi^- + P$
$(N, \bar{P})$ $\quad G_\Lambda \psi_{\Lambda^0} \psi_N \psi_N \psi_N$
$\tau_{\Lambda^0} \simeq 3.7 \times 10^{-10}$
$G_\Lambda = 2.7 \times 10^{-51}$

2. 木庭：Rochester 会議 市習 [?].
Lee-Orear → Lee-Yang
$\theta^+ \quad \tau^+$
$0^+ \quad 0^-$
life, excitation 等が同じ
一方ができて 他方 [illegible]
$\tau^+ \to c_p \theta^+$.
$[H_s, c_p] = 0$
$\pi^+ + N \to \Lambda_1^0 + \theta^+$
$\to \Lambda_2^0 + \tau^+$
$c_p P - (-)^s P c_p = 0$
$\boxed{s=0 \quad c_p = -1} \not\to \pi + N$
(A) el. mg. field → ~~$[H_s, c_p] = 0$~~ strong では
$\Lambda_1^0 \to \Lambda_2^0 + \gamma$ E1. $\quad \tau \ll 10^{-12}$ sec.
$\tau^+ \to \theta^+ + \gamma$ E1 for spin 0 or Δm 小.
τ : 大
(B) el. mg. が strong.
Λ_1^0, τ^+ 共に τ が大きい.

3. 石綿：lepton の電子 [?]
(a) strong $\quad \Delta q = 0 \quad \Delta J = \Delta I_3 = 0 \quad$ charge space scalar
(b) γ $\quad$ scalar + vector
(c) baryon weak $\quad \Delta q = 0 \quad |\Delta I| = |\Delta I_3| = 1/2 \quad$ spinor
(lepton weak) $\quad \Delta q = 0$

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Konop. M

$\mu^- + p \not\to p e e^-$

$\mu^- \not\to e^- + e^+ e^-$

(a) baryon

(b) Fermion

(c) μ^+, e^- normal　μ^-, e^+ abnor.

$\mu : 1/2$　μ^+, μ^0

$e : 1/2$　e^-, e^0

μ-decay : scalar

μ capt. } spinor

β

4. [illegible]：[illegible]のくりこみ

5. [illegible]：[illegible]の[illegible]について

$$(\alpha_\mu \partial_\mu + \kappa \chi)\psi = 0$$

$$\chi^2 = \chi.$$

~~$\chi\alpha_\mu + \alpha_\mu \chi = \alpha_\mu$~~

A　$\chi = 1$

B　$\chi \neq 1, 0 \rightarrow \chi\alpha_\mu + \alpha_\mu\chi = \alpha_\mu$

C　$\chi = 0$

B.　$\chi + \bar{\chi} = 1$　$\left.\begin{array}{l}\chi\alpha_\mu = \alpha_\mu\bar{\chi} \\ \bar{\chi}\alpha_\mu = \alpha_\mu\chi\end{array}\right\}$

$$\chi\bar{\chi} - \bar{\chi}\chi = 0$$

I. (1/2)　$\chi, \bar{\chi} = \frac{1+\gamma_5}{2}, \frac{1-\gamma_5}{2}$　✕

(integer)　$(\beta_\mu \partial_\mu + \chi)\psi = 0$

Tophon

No.5. 1955. 6. 10.000

6. 中西：Dysonの Power-counting theorem
$n = F - V + 1$

7. 段林：束縛状態と散乱振幅
Mandelstam　Roy. Soc.
Eden
(Schrödinger eq.)　(path integral)
B.S.　[Bound state]
[S-matrix]
stationary　(non-stationary)

Husimi; Prog.
Burton–Prorde; N. C.

8. 谷内：非線形波動方程式