Researchn Istitute for Fundamental Physics
Kyoto University

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1. 山崎君: Coester 理論について

usual $\longrightarrow$ Coester

$$T \equiv T(x_n \cdots x_1; y_1 \cdots y_m; z_1 \cdots z_k)$$

$$\equiv (\Phi_0, T(S\,\psi(x_n)\cdots\psi(x_1), \bar\psi(y_1)\cdots\phi(z_1)\cdots)\Phi)$$

$$S = e^{g\int :\bar\psi\gamma_5\psi:\phi}$$

$$\cancel{= (\Omega_0 \cdots C(z)}$$

$$T(\cdots\phi(z_1)\cdots) \equiv (\Omega_0 \cdots C(z_1)\cdots T(e^{\int C^+(x)\phi(x)dx})\Omega_0)$$

$$[C(x), C^+(x')] = \delta^4(x-x')$$

$$C(x)\Omega_0 = 0$$

$\sim$ Dirac $\quad T(\psi(x_n)\cdots) \equiv$

$$(\Omega_0\, a(x_m)\cdots b(y_1)\cdots C(z_1)\cdots T(e^{\int (C^+(x)\phi(x) + a^+(x)\psi(x) - \bar\psi(x)b^+)dx})\Omega_0)$$

$$T = (\Phi_0 S T(\qquad)\Phi)$$

$$\equiv (\Phi_0\Omega_0, a(x_m) \quad - - - - \quad \Omega_0\Phi)$$

$$e^{g(\int b\gamma_5 ac - Sp\, S^{(1)}(0)c)}$$

$$= (\Omega_0, e^{g(\int \quad)} a(x_m)\cdots (\Phi_0 T(e^{\int C^+(x)\phi(x)dx})\Phi)\Omega_0)$$

$$e^{A+B} = e^A e^B e^{\frac{1}{2}[A,B]}$$

$$= (\Omega_0, e^{g\int :\bar\psi\gamma_5\psi:\phi\, dx}\, \bar\psi(x_m)\cdots (\Phi_0, e^{\int (C^+\phi^+ + a^+\psi + \bar\psi^+ b^+)dx}\Phi)\Omega_0)$$

$$\Phi = f(\cdots a_k^* \cdots)\Phi_0$$

$$(\Phi_0\; e^{\int C_k^* \frac{a_k}{\sqrt{2\omega_k}} dk} f(\cdots a_k^* \cdots)\Phi_0)$$

$$= (\Phi_0, f(\cdots a_k^* + \frac{1}{\sqrt{2\omega_k}} C_k^* \cdots)\Phi_0)$$

$$\overset{\parallel}{0}$$

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$$T = \left(\Omega_0\, e^{g\int :\bar\psi\gamma_5\psi:\phi}\, \psi(x_n)\cdots\bar\psi(y_i)\cdots\phi(z_i)\cdots \times \underbrace{f\left(\cdots\frac{1}{\sqrt{2\omega_k}}c_k^{*}\cdots\right)\Omega_0}_{\Omega}\right)$$

$$= \left(\Omega_0\, \psi(x_n)\cdots\; \Omega^{H}_{HA}\right)$$

$$\Omega^H = e^{g\int :\bar\psi\gamma_5\psi:\phi\, dx}\,\Omega$$

$$\mathcal{H}(x)C(x)\Omega = 0$$

Heisenberg 表示ではどうなるか.

2. 場の理論. 非局所場論について.

3. 原理: 素粒子の統一理論

i) Non-local の場の内容

$(\square - M)\,u(k\,r) = 0$

$$\left.\begin{aligned} M &= \Gamma_\nu\Gamma_\nu \\ \Gamma_\nu &= P_\mu R_{\mu\nu} \end{aligned}\right\}$$

S

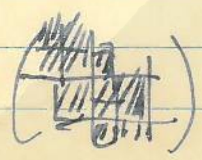
$u \quad s,\, m \quad (2s+1)$

ii) 内部空間の ~~Non-local 性~~ Lorentz invariance ~~性質~~ からくる限定.

Harish Chandra, P.R.S. 1947

$K = ($  Ex. spinor

$R_{\mu\nu} \to$

$L =$ 

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$$R_{\mu\nu}R^{\mu\nu} = S^2 - M^2$$

inversionを入れる.

$$\{\rho_i\,\rho_j\} = 2\delta_{ij}$$

$$\left.\begin{array}{l} K \to K \\ L \to \rho_1 L \\ I \to \rho_3 \end{array}\right\}$$

$(S, \underbrace{M, \rho_1}_{\text{素粒子の保存則.}})$ 規定量の意味.

4. 崩壊

5. 衝突

6. 谷川氏の遠隔場模型

Boson: $-m s_0 = \tan m s_0$

$m_0 = 0$, $m_1 = \underset{\underset{265}{\|}}{m_\pi}$, $m_2 = 1002 \doteqdot m_\tau(?)$

Fermion:

$m = 0$, $\tan \frac{m}{2} s_0 = \pm 1$

$m_0 = 0$ $m_1 = \frac{\pi}{2}\frac{1}{s_0} = 205 \doteqdot m_\mu$

$m_9 \doteqdot m_N$

$m_{11} = 2255$ $(\Lambda^0 ?)$

$m_{13} = 2600$ $(\Lambda^\pm ?)$

Interaction;

7. 本題: 非局所場理論のうつりかわり.

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