Field Group　　　　　　Nov. 7, 1956

申地Q:

Källen: 1, Math. Consistency of QED
2, Ghost states in Field Theory

1.　$\mathcal{L} = -\dfrac{N^2}{4}\left[\bar{\Psi},(\gamma\partial+m)\Psi\right] + h.c$

$+\dfrac{1}{2}N^2[\bar{\Psi},\Psi] - \dfrac{1}{2}\left(\dfrac{\partial A\nu}{\partial x_\nu}\right)^2$

$+\dfrac{1-L}{4}\left(\dfrac{\partial A\nu}{\partial x_\mu} - \dfrac{\partial A\mu}{\partial x_\nu}\right)^2$

$+\dfrac{ie}{4}N^2\left\{A\mu,[\bar{\Psi},\gamma_\mu\Psi]\right\}$

$1-L = Z_3^{1/2}$　　　　$N^2 - Z_2 = Z_1$

$K = \delta m$

$\Pi(p^2) = \dfrac{V}{3p^2}\sum'_{p^{(\alpha)}=p}\left|\langle 0|j_\nu|\alpha\rangle\right|^2 (-1)^{\frac{N^2}{4}}$

$\quad\quad\quad\quad\quad\quad$ positive definite

$\bar{\Pi}(a^2) = P\displaystyle\int \dfrac{\Pi(\omega)}{\omega\left(1+\frac{\omega}{a^2}\right)}d\omega$

$1+\bar{\Pi}(0) = \dfrac{1}{1-L}$

2.　$N^2 = 1 - \bar{\Pi}^*(0)$

$\quad\quad N^{-2} = 1 + \bar{\Pi}(0)$

$N \to 0\quad\quad Z_2^{-1} \to \infty$

No. 5 1956. 9. 20,000

Field Group　　　　　　　Nov. 21, 1956

Nakanishi　Q.E.D. a consistency
Gupta
$$\Psi_n \to \Psi \qquad \| \Psi_n - \Psi \| \to 0$$

Dec. 5, 1956

Fukui, 細谷暁夫 .
gemisch Renormalization
§1. Real and Ideal Observers
§2. Some Properties of Gemisch
§3. Possibility of Div. free Removal.
§4. Discussion

§1. Dyson,
　　　real　　　ideal
$\hbar, c, e, m.$ 　　　$\hbar, c$
　Schwinger
　Heisenberg (30)　$g(0)$　　　$\Omega(g)$
　Landau, Peierls [51]
　Bohr, Rosenfeld [33]
　　　〃　　　[50]

　Rosenfeld (56)
　Heitler

$\lambda \to 0$
① $N \gtrsim L/\lambda$　　(電磁の種類)
② Kickson
③ springion
④ anti-testion
⑤ $e/e \gtrsim 137 \times N^3$
⑥ $M \gtrsim \dfrac{\hbar}{cL} N^2$
Heisenberg, S-matrix　　$\longrightarrow$　(real)
　　　　　　　　　　　　　　　　ideal

②

① 記載法
② Speculation する
③ Gemisch

§2, Gemisch
i) 不統計 $\dfrac{(Sp\,W)^2}{Sp\,W^2}\underset{\infty}{}$ 大

混沌 I.

ii) $Sp\,(W\,P_a)$
$Sp\,(W\,A)$: 型川結他

iii) 相互依頼定号.

$i\hbar\dfrac{\partial A}{\partial t}=[A,H_0]$

$i\hbar\dfrac{\partial W}{\partial t}=-[W,H]$

$W = P_{\psi_0} + \int \dfrac{1}{i\hbar}[P_{\psi_0},H]\,dt + \cdots$ (一つの粒論)

iv) 可能な解
$W = I$ (他の粒論)

§3, $H_0 = \int \lambda\,dE_0(\lambda)$ $\qquad I = \displaystyle\int_{-\infty}^{+\infty} dE_0(\lambda)$

$H = \int \mu\,dE(\mu)$

i) 陽切等級
ii) $Sp(H_0 I)=\infty$

$W = \int \phi(\lambda)\,dE_0(\lambda) \to [W,H_0]=0$

$0\quad W = \int \psi(\mu)\,dE(\mu) \to [W,H]=0$

$Sp(H_0 W)\neq\infty$?

§4, non-locality

No.5 1956. 9. 20,000