Research Institute for Fundamental Physics
Kyoto University

Wednesday morning　　　　June 20, 1956

Wick, Pion Physics

$\int \tau_\lambda \vec{\sigma} \vec{D} \phi_\lambda$　　　Chew-Low theory

a) Properties of the nucleon
b) π-meson scattering
c) photo-meson production

Limit of validity
cut-off ~ Mc

Heitler
$(\frac{1}{2} \sim 1)$ Mc
$\mu_{\pi^+} - \mu_{\pi^0} \sim 10\, m_e$
$K \sim \frac{2}{3}$ Mc

Blockintsev
$10^{10} \sim 10^{12}$ eV
Landau

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Källen: Inconsistency of Q.E.D.

Landau

$$\bar{\pi}(p^2) - \bar{\pi}(0) \sim \frac{1}{1 - \alpha \frac{4\pi}{3} \log^2 \frac{\Lambda}{E}}$$

Källen

$$= -P \int_0^\infty \frac{da\, \pi(-a)}{a(1 + \frac{a}{p^2})}$$

$$\pi(p^2) > \frac{c}{2} N^2(p^2) (-p^2/4m^2)^{\alpha(p^2) \log(-p^2/m^2)}$$

$$\alpha(p^2) \log(-p^2/m^2) \sim 1$$

$$E \lesssim m e^{137}$$

Salam: Parity Symmetry

(θ, τ) (Λ_1, Λ_2)

π N

$\pi + N \to \tau + \Lambda_2$

$\to \theta + \Lambda_1$

$\tau \to \mu + \nu$ P T V

$\theta \to \mu + \nu$ S T A

$\tau \equiv N \tilde{\Lambda}_2$

$\theta \equiv N \tilde{\Lambda}_1$

$\pi \equiv N \tilde{N}$

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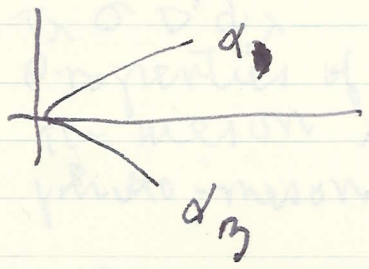
Yuan, π - Nucleon scattering



π - π - interaction

Mukhin, π^+ - P scattering

Orear, S-phase shift.

recoil, K-meson (Matthew) (Cini)
pion-pion interaction (Salam)

Zinov, Korenchenko
$\pi^- + p \rightarrow \pi^- + p$
309 MeV

Afternoon

Bernaldini, photo-meson production
Kroll-Rudermann
Chew-Low
scattering — photo-neutral ~~pion~~ π-production

Pauli:
Cowan and Reyns (Los Alamos)
6×10^{-44} cm^2 neutrino
$\nu + p \rightarrow e^+ + N$

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