

April 3, 1967

Dear Feyn:

Thank you very much for your letter of March 25 and for your acceptance of our invitation for a colloquium talk.

The title you have proposed sounds perfectly alright for a colloquium talk, and the title does not impose any constraint on the content of your talk. As soon as your schedule is fixed please let me know so that I can reserve your accommodation and pick you up at the airport. I am looking forward to hearing from you about what you are doing.

Let me add a few remarks about what you asked me in your last letter. I made an assumption regarding some properties in field theory: ^{both} if $\varphi_1(x)$ and $\varphi_2(x)$ are local operators and have the same set of quantum numbers, then $\varphi_1(x)$ must be proportional to $\varphi_2(x)$ provided their form factors satisfy unsubtracted dispersion relations. I have two consequences of this assumption.

$$H_{weak} = \frac{G}{\sqrt{2}} (J_\lambda^\dagger l_\lambda + J_\lambda l_\lambda^\dagger) + f \partial_\lambda K_\lambda + (\mu \rightarrow e + \nu + \bar{\nu})$$

$$1. \quad \left[\int K_0 d^3x, J_\lambda(x) \right] \propto J_\lambda(x).$$

This eq. ~~requires~~ implies $CP(\partial_\lambda K_\lambda)(CP)^{-1} = -\partial_\lambda K_\lambda$, and if

$$K_\lambda = \sigma_{F_{3\lambda}}^5 + \beta(\sigma_{F_{6\lambda}}^5 + \sigma_{F_{6\lambda}}^5), \quad \text{we get } \beta = \frac{-1}{4} \tan 2\theta.$$

$$2. \quad \text{In } K_L^0 \rightarrow 2\pi, \quad \phi \neq \frac{1}{2} \text{ is forbidden, so that } \eta_{00} = -2\eta_{+-}.$$

I have also determined f from the Swame decay of
hyperons and K_S meson and obtained

$$|f| = 4.7 \times 10^{-3}$$

This gives an excellent agreement with experiment in
the order f^3 , and the decay rates $K_L \rightarrow 2\pi$ are reproduced
within factor 2 or so.

With best wishes to your family,

Yours,

Kazuhiko

March 17, 1967

Dear Feza:

David Pines asked me to write to you and to inquire of you about a possibility of your visiting us here for a colloquium talk.

I would be very happy if you could accept this invitation so that I could see you again before I leave US for Tokyo at the end of May. Right now, the open dates are April 20, May 11 & 18.

I am eager to hear from you about what you are doing now.

I am also eager to hear your opinion about what I am doing.

I came to the conclusion that both CP-conserving and-violating non-leptonic decays can be described in terms of one Hamiltonian

$$H_{NL} = f \partial_\lambda K_\lambda, \quad \begin{matrix} \lambda (4, 6, 4) \\ 3 \end{matrix} \quad f \text{ dimension} \quad f \sim 10^{-3} \frac{g^2}{2M^2}$$

where $K_\lambda = \sigma_{F_{3\lambda}}^5 + \alpha (\sigma_{F_{6\lambda}}^5 + \sigma_{F_{6\lambda}}^5) \sim \pi^0 + K_2^0$.

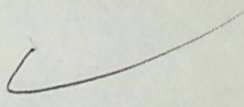
H_{NL} is given in this four-divergence form as a consequence of field equations including strong and electromagnetic interactions. Because of the divergence form

$$(\mathcal{S}_1)_{\beta\alpha} = -i f \int \langle \beta | \partial_\lambda K_\lambda | \alpha \rangle d^4x = 0.$$

Notice that CP $H_{NL} (CP)^{-1} = -H_{NL}$. $\mathcal{S}_2 \sim f^2$, then describes the usual CP-conserving leptonic decays and

$f \sim 10^{-3}$. Therefore, $f^3 / f^2 \sim 10^{-3}$.

UNIVERSITY OF ILLINOIS
DEPARTMENT OF PHYSICS
URBANA, ILLINOIS 61803



In the third order CP is violated and $K_2 \rightarrow 2\pi$ occurs.

$S(K_2 \rightarrow 2\pi) / S(K_1 \rightarrow 2\pi) \sim f \sim 10^{-3}$ agrees with experiment.

I made further detailed calculations, and I hope that you

can visit us soon.

With my best regards to Suha and Tusef.

Sincerely,

Kazuhiko Nishijima

Weston's
WINCHESTER
BOND
50% COTTON FIBER

Boğaziçi Üniversitesi

Arşiv ve Dokümantasyon Merkezi

Kişisel Arşivlerle İstanbul'da Bilim, Kültür ve Eğitim Tarihi

Feza Gürsey Arşivi



FGASCI0200701