VI
June ~ Sept. 1958

NOTE BOOK

Manufactured with best ruled foolscap
Brings easier & cleaner writing

研究会記録、講演会等
その他に関する
覚え書　June ~ Sept.
1958

VOL. VI

I: June 30, 1958 ~ July 5, 1958

Ia: CERN 国際会議 メモ

II: Torino　July 9 ~ 11, 1958

III: São Paulo – Rio – Buenos
July 14 ~ Aug. 12, 1958

IV: Geneva – Brussels – Oosterbeek
~~[illegible]~~ Aug. 13 ~ Aug. 28, 1958

H. Yukawa

Nissho Note

日章 B A 4 45

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CHAPTER	DESCRIPTIONS	PAGE
	~Geneve	
June 24 ~ July 13 1958	CERN High Energy Conf., Geneva	
July 9~11	Torino	
July 14 ~ 25: São Paulo		
July 25 ~ Aug 1: Rio de Janeiro		
Aug 1 ~ Aug 12: Buenos Aires		

Stay in Geneva I.
for CERN Conference

June 20 Leave Kyoto for
Tokyo by Hato

June 23 Leave Tokyo for
Geneva by SAS with
Prof. Yamaguchi
(Copenhagen: N. Bohr, R. Oppenheimer)
June 24 Arrived in Geneva
Airport
Stay at Hotel d'Angleterre
Dr. Toyoda
Consul General Sato

Monday, June 30

Chairman
Tamm

9.00 hrs: Nucleon structure

Panofsky

Breakdown of Q.E.D.

$q^2 = (\Delta\vec{p})^2 - (\Delta E)^2$

photon propagator:

$$-\frac{1}{q^2} \to -\frac{1}{q^2} + \frac{1}{q^2}\frac{1}{\left[1-\left(\frac{\Delta}{q}\right)^2\right]}$$

virtual photon

$\Delta \sim 1/e$

virtual electron

$$-\frac{1}{p^2} \to$$

$$1 - \frac{q^2\langle r\rangle^2}{6}$$

$$\Lambda^{-1} < \frac{1}{3}\times 10^{-13}\ \text{cm}$$

el-el scatt. $q^2 = 2mE$

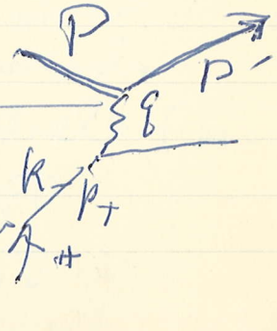
μ-meson mag. mom.,

$$g = 2.(1.0012) - \frac{\alpha}{3\pi}\left(\frac{q}{\Lambda}\right)^2$$

accuracy 2.5×10^{-5}

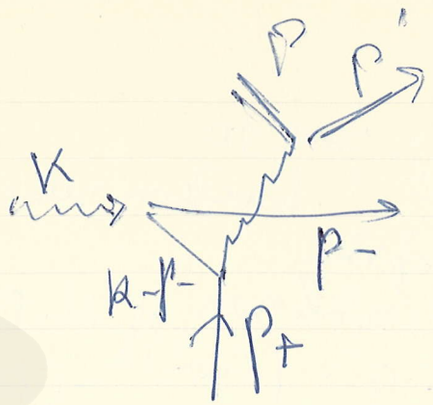
Hardy 1.0015 ± 0.0006

Coffin 1.0026 ± 0.0009



B. Richter, Stanford

sensitive to electron-cut-off



inserative

$$\frac{\sigma_{obs}}{\sigma_{th}} = 0.96 \pm 0.14$$

$\lambda_c^{-1} = 0.4$ fermi

Landau - Pomeranchuk effect

Hofstadter et al:

$F_{1p}(q^2)$ $F_{1n}(q^2)$

$F_{2p}(q^2)$ $F_{2n}(q^2)$

$F = 1 - \frac{1}{6} q^2 \langle r \rangle^2$

$F_{1p}/F_{2p} =$ 1.72 ± .20 q^2 $9.33 \times 10^{26}\ cm^{-2}$

1.16 ± 20 $4.58 \times 10^{26}\ cm^{-2}$

$$F_D^2 = F_0^2 (F_{1p} + F_{1n})^2$$

i) electron-neutron Foley term
$\langle r \rangle_{in}^2 = (0.003 \pm 0.007) \times 10^{-26}\ cm^2$ 408 MeV

~~electron-neut~~ π^--production

ii) electron-deuteron

$\sigma_D = \sigma_n + \sigma_p$

$\sigma_n = \sigma_p \left[\frac{\sigma_D}{\sigma_p} (1+\Delta) - 1 \right]$

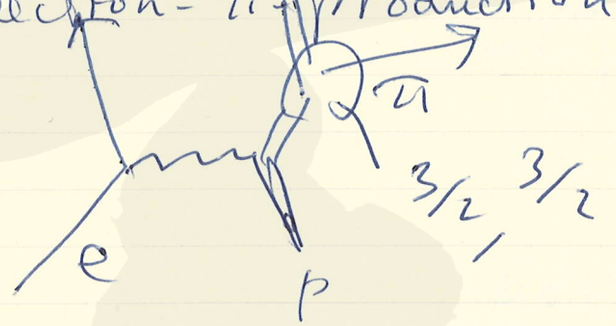
$$\left(\frac{\sigma_n}{\sigma_p}\right)^2\left(\frac{F_{2p}}{F_{2n}}\right)^2 = f(q^2, E, \gamma)$$

$$\gamma = \frac{F_{n1}}{F_{n2}}$$

γ_{2n}^2 ~~$\approx$~~ $\approx \gamma_{2p}^2$?

$$\begin{cases} F_{1n} = 0 \\ F_{1p} = F_{2p} = F_{2n} \end{cases}$$

iii) (photo. π-production)
electron-π production



Nambu

I. Q.E.D. hold 0.3 fermi
II.
III. $F_{1p} = F_{2p} = F_{2n}$ 20%
IV.
V.
VI

Drell : Nucleon Structure

Theoretical

$e + p \to p + e$
$e + d \to e' + n + p$
$e + d \to d + e$
$e + p \to e' + \{ n + \pi^+ ; p + \pi^0 \}$

P : $G_1^P(q^2)\,\gamma_\mu + i\,G_2^P(q^2)\,\sigma_{\mu\nu} q^\nu$

kinematic correction (bound state correction)

1) ΔE
2) $[E^2 - (\vec{p}^{\,2} + m^2)]$

mesonic

a) } x
b)
c) final state

$\gamma + d \to n + p$

$e + d \to d + e$

$(F_1^N + F_1^P)^2$

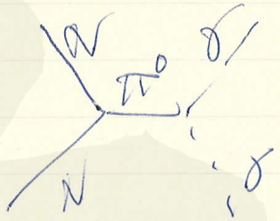
$q \sim 2.8 f^{-1}$

afternoon
Nucleon, pion, photon, antinucleon
experimental

antiproton-proton collision

MeV	total	elast	exchange	annih.
133	166	72	10	84
197	152	64	11	77
265	124	50	8	66
333	114	49	8	57

July 1, Tuesday, Morning
Chew: theoretical
π-N-scattering angular distribution
$f_c^2 = .08 \pm .02$
photo-meson-production
$f_c^2 = .075 \pm .03$
photon-nucleon
-scattering



$N-N$, $N-\bar{N}$

$\mathrm{Re} f(E) \sim E \int_{-1}^{1} [\sigma(\cos) - \bar{\sigma}(\cos)]$

$\mathrm{Im} f(E) \sim \frac{k_R}{4\pi} \sigma \Rightarrow E\sigma(\cos)$

$\sigma(\pi) \sim \bar{\sigma}(\cos)$

π+D → nn+p

dispersion relation v. concept of
el.-particle

afternoon

Yukawa,

$$g_{\mu\nu} = \delta_{\mu\nu} = a\,\bar{\psi}\gamma_\mu\psi\cdot\bar{\psi}\gamma_\nu\psi + b + c$$

Meson field:

$$\left(\Delta - \frac{1}{c^2}\frac{\partial^2}{\partial t^2}\right)\varphi + \varkappa^2\varphi - \lambda^2\varphi^3 = 0$$

$$\varphi = \pm\frac{\varkappa}{\lambda} + \varphi'$$

$$\left(\Delta - \frac{1}{c^2}\frac{\partial^2}{\partial t^2}\right)\varphi' - 2\varkappa^2\varphi' + \cdots = 0$$

(Fermion: ψ ? $\varphi = \bar{\psi}_0\psi$?)

Heisenberg,

$$f(\mathcal{J}^2)\cdot\mathcal{J}_\mu\gamma_\mu\cdot\varphi = 0$$

↓ meson lepton

$$(p^2 + \varkappa^2)\varphi_\alpha = 0$$

$$\left.\begin{aligned}\gamma_\nu p_\nu\psi &= i\varkappa\hat{\psi}\\ \gamma_\nu p_\nu\hat{\psi} &= i\varkappa\psi\end{aligned}\right\}$$

$$\psi \to \begin{pmatrix}\psi\\ \hat{\psi}\end{pmatrix} \qquad \hat{\psi} = \hat{\Sigma}_1\psi$$

$$\begin{pmatrix}0 & 1\\ 1 & 0\end{pmatrix}$$

$\psi \to a\psi + b\gamma_5 \Sigma_3 C^{-1}\bar{\psi}$

Note
$\psi \to e^{i\alpha\gamma_5\Sigma_3}\psi$

mass of the nucleon

1st appr.	$\pi l = 7.08$	
2nd	6.67	
	not adjusted	
parity	+ − − +	
	p N $\bar{p}$ $\bar{N}$	

meson

π^+	π,	π_0	π^-
3.01			
0.41			
+	+	−	+
+	−	−	+

$\gamma_\mu \frac{\partial}{\partial x_\mu}\psi \pm l^2 \gamma_\mu\gamma_5 \psi(\bar{\psi}\gamma_\mu\gamma_5\psi) = 0$

± sign.
half spin ⇄ integer spin

	nucleon	meson
1. appr.	7.08	
2. appr.	6.67	
		2.5
		(K-meson?)

Ascoli and Minardi
Imag. Metric
Complex ghost
→ definite metric
non-local theory

Pauli:

$$\gamma^\nu \frac{\partial \psi}{\partial x^\nu} + F(\psi(x), \bar{\psi}(x)) = 0$$

$$\{\psi_\alpha(x), \psi_\beta(x')\} = \{\psi_\alpha(x), \bar{\psi}_\beta(x')\} = \begin{cases} 0 \text{ for } (x_\nu - x'_\nu)^2 \\ 0 \text{ for } x = x' \end{cases}$$

$$\left\{\frac{\partial^n}{\partial t^n}\psi_\alpha(x), \bar{\psi}_\beta(x')\right\} = 0 \quad \text{for } t = t'$$

Lee-model: integral eq.

Stueckelberg
Causality
Oppenheimer
Gell-Mann

Wentzel, vacuum

Pauli: indefinite metric
complex energy (källen)

$$E_A = E_{A'}^*$$

$$(A, A) = (B, B) = 0$$

$$(A, B) = 1$$

$$\psi = \psi_N + c_A \psi_A$$

$$c_B = 0 \quad \text{for } t_2 \qquad \text{for } c_A(t_1) = 0$$

$$U(t_1, t_2) \cdot U^\dagger \neq 1 \longrightarrow 1 \text{ for } \infty$$

$$U^\dagger U = 1$$

Bogliubov:

$$\psi \to \hat{\psi}(x) = \psi + \sum_n c_n \psi_n$$

$H_I \quad H_{II}$

$$D = \frac{1}{p^2+M^2} \to \frac{1}{p^2+M^2} + \sum \frac{\sum c_n^2}{p^2+M^2}$$

$$\phi = P^{\varphi}\phi + (1-P^{\varphi})\phi$$

$$F_{-\omega} + F_{\omega} = 0$$

$$\varphi_{\omega} = S\phi_{-\omega}$$

physical $\quad c\varphi_{\omega} = \hat{S}\varphi_{-\omega}$

$$\hat{S} = PS\frac{1}{1+(1-P)S}$$

$$\hat{K} = P K P$$

macroscopic causality?
transparency phenomena?!
non-local Lagrangian:

Transparency

glaser:

$$\phi = A + B$$

positive freq. | neg. freq.

$$\mathcal{L}' = \phi^4(x)$$

$$[\phi(x), \phi(x')] = 0$$

c-number

$[\mathcal{L}'(x), \mathcal{L}'(x')] = 0$

$S = \exp i\eta \qquad \eta = \int \mathcal{L}'(x)\, d^4x$

$\tilde{S} = 1 + i \tan \eta/2i \,/\, 1 - i \tan \eta/2i$

not microcausal *
macrocausal ?

Kroll : Lee Model
two particle state   N, V
dipole ghost として出てくるはずはない.
norm negative   (bound state)

Källen :
localizability }
high mass } の complex root の方がよい.

---

* $\tilde{S}|2\rangle, \tilde{S}|3\rangle$

$= \dfrac{1 + i\, \eta/2i}{1 - i\, \eta/2i} |2\rangle, |3\rangle$

Heitler, damping theory
forward scattering の dispersion relation の要求を満していない.

Oppenheimer :
ghost }
indefinite metric } non-causal ?
Pauli : yes
Bleuler : zero norm

Schwinger: abstraction
classical space-time (Minkowski)
→ Euclid
$G_+(\chi_1 \cdots \chi_p) = \langle (\chi(x_1) \cdots \chi(x_p))_+ \rangle \varepsilon_+(x_1 \cdots x_p)$
Green function
Wightman:
$e^{-iE(t_1-t_2)}$
$t \to \tau e^{-i\theta}$ $0<\theta<\pi$
$S_{\mu\nu}$ S_{kl}: anti-sym. imaginary
$S_{k4} = \pm i S_{k0}$
S_{k0}: sym. real
$[R_s, S_{kl}] = 0$
$[R_s, S_{k4}]_+ = 0$
$R_t = R_{st} R_s$
$S^{(E)}_{\mu\nu} = e^{\mp\pi i/4 R_t} S_{\mu\nu} e^{\pm\pi i/4 R_t}$
$S^{(E)}_{\mu\nu}$: anti-sym. imag.
fermion: 5成分
or complex field
time-order?
4次元化:
$[\chi(x), \chi(x')]_\pm = 0$
$[\bar{\chi}(x), \chi(x')]_\pm = \delta(x-x')$

Salam: unstable particle
$\rho(p_\mu^2)$

July 3
Morning, Strange Particle Production
Steinberger: Experimental

$\pi + p \rightarrow \Lambda + \Theta$
$\Sigma + \Theta$
$N + N \rightarrow$ ...
$\gamma + p \rightarrow K$

polarization

parity

Mass 500 m_e Particles
Alichanian 1956
5.40 m_e 9 e^-, 2 e^+ (3.200 m)
no decay particle visible
(Yuta?)
$m_{\sim 500 m_e} : m_\mu \approx 1 : 200$
$< 1 \& 1000$ Keuffel (2000 m)

Conversi et al. 2600 m.w.e
$< 1 : 1200$

Pinenné et al (Echo lake) 3000 m
negative result

Columbia, Bombay
M.I.T. sea level 3050 m 1:700
500 m_e 1:700
μ 1:1250

$\frac{1}{5000}$

Powell
$2 \times \Xi^-$ $1 \sim 2\ \mu b.$

Gell-Mann, Theor.

$\gamma + N \to \pi + N$, $\pi + N \to K + \Lambda$

Pais, theory with mag. mom.

Fujii and Marshak

$\mu_{\Lambda\Sigma} = \frac{g_{\Sigma K}}{g_{\Lambda K}} \mu_x$

μ_x: transition mag-mom.

$\Gamma_{\Sigma^0} = \mu_x^2 \omega^3 / 137 M^2$

(PS) $\frac{g_{\Lambda K}^2}{4\pi} \approx 1\frac{1}{2} \left(< \frac{g_{\pi}^2}{4\pi} \right)$ $\lambda \sim 1$

possible resonance

global sym.

$\mu_\Lambda \neq 0$

$\mu_{\Sigma^0} \neq 0$

$\mu_\Lambda \neq -\mu_n = 1.9$

(S) $\frac{g_{\Lambda K}^2}{4\pi} \ll 1$

PS looks better

$g_{\Lambda K} \mu_\Lambda$ $g_{\Sigma K} \mu_x$

Baz and ORun:

γ cusps: $\pi + N \to K + \Lambda$ | $I = 1/2$

Σ at thres. of $\pi + N \to K + \Sigma$ |

λ relative parity

partiés equal $S_{1/2}(K\Lambda)$

inégal $P_{1/2}(K\Lambda)$

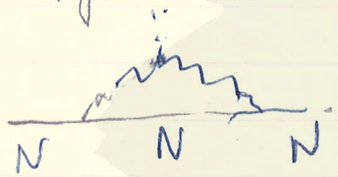
Miyazawa:

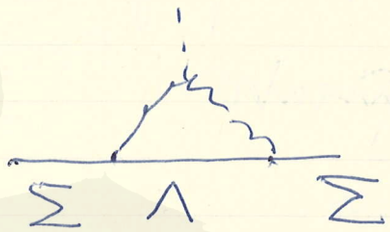
Sachs:

how

July 4, morning
Special Topics
M. Goldberger: Dispersion Equations
Nambu, Symanzik i Green fns (perturb.)
Grebov: 3-point green fn.

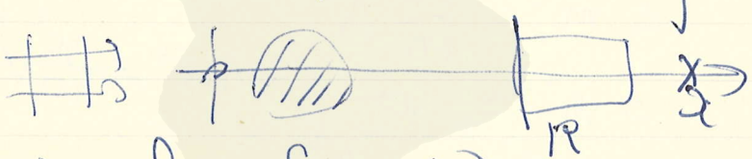
Källen:
Wightman:





$m_\Sigma^2 > m_\Lambda^2 + m_\pi^2$

A. Bohr, Foundation of dispersion Relation
macroscopic causality

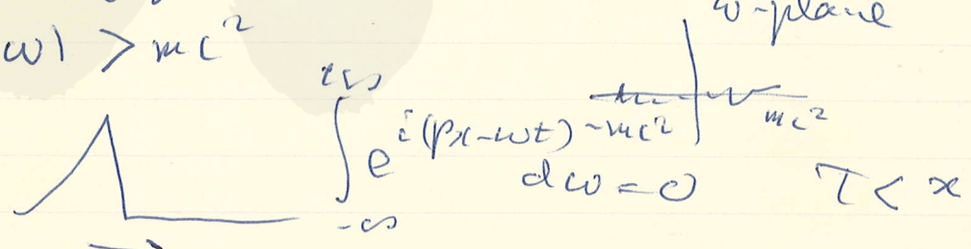


inc. signal $\delta(x-t)$

$\psi(x-R,t) = 0 \qquad t < R$

$\frac{1}{2\pi}\int d\omega\, e^{i\omega(x-t)} + \frac{1}{\pi} e^{i\omega(R-t)} f(\omega, \vartheta)$

$|\omega| > mc^2$



$\left(e^{-ikx} + \frac{1}{r} e^{-ikr} f(\omega)\right) e^{-i\omega t}$

non-propagating region
Oppenheimer:
GW:

Gost:
non-physical region
Bogliubov:
Peierls:

R. Feynman: $\pi \to e + \nu$

$\frac{\pi \to e + \nu}{\pi \to \mu + \nu}$ $\quad 13.6 \times 10^{-5}$ th.
$\quad < 1.6^{-5}$
$\quad 0 \pm 10^{-5}$ exp.

spin
0 $\quad \Delta m^2 = \frac{3e^2}{2\pi} \Lambda^2$
1/2 $\quad \Delta m^2 = 0 \quad + m^2 \to \frac{3e^2}{2\pi}(\Lambda_1^2 - \Lambda_2^2)$
1 $\quad \Delta m^2 = \therefore \Lambda^2$
$\quad \therefore \quad \Lambda^2$

Marshak:
Chirality
Skyrme

A. Roberts, Parity Conservation in strong interaction

$\uparrow p + Al$ 20.9 MeV

$P = .89 \pm .02$

$\theta = 92^\circ$

$E_\pi = 41$ MeV

$\varepsilon = 0.014 \pm 0.037$

$F^2 \leq 2 \times 10^{-3}$

L. Okun: γ_5 - Invariance

$\psi \to \gamma_5 \psi$

$\bar\psi \to -\bar\psi \gamma_5$

1) el. $\bar\psi \gamma_\mu \psi A_\mu$

2) $(\bar\psi (1-\gamma_5)\gamma_\mu \psi)(\bar\psi (1-\gamma_5)\gamma_\mu \psi)$

strong interaction:

$(\bar\psi O \psi)(\bar\psi O \psi)$

$\Lambda, n, p \to$ Sakata model

$\Lambda, \Xi^- \Xi^0$

separate conservation of Λ

β vector-interaction follows from

$$\frac{\partial J^\mu_v}{\partial x_\mu} = 0$$

leptonic decay: $\Delta T = 1/2$

other decay: $\Delta T = 1/2, 3/2$

$\mathcal{L}_{str.} = \mathcal{L}_{NN} + \mathcal{L}_{N\Lambda} + \mathcal{L}_{\Lambda\Lambda}$

$\mathcal{L}_{NN} > \mathcal{L}_{N\Lambda}$

Mass term

e, μ, ν
$\Lambda, \Sigma, p \quad \gamma$

J. Werle: S-Matrix & TCP
Nishijima

Goldhaber: (i) β-Decay

n: $T_{1/2} = 11.7 \pm 0.3$ min. (USSR)

$\frac{|C_{GT}|^2}{|C_F|^2} = 1.55 \pm 0.08$

$ft = 1170 \pm 36$

H^3: $ft = 1132 \pm 40$

$A = -0.111 \pm 0.02$ (L.S.A.)

$\rightarrow \frac{|C_{GT}|}{|C_F|^2} =$? agree? (1.3) Chicago

He^6: Axial vector

Li^8: "

Na^{24}

$G_F = 1.41 \times 10^{-49}$ erg cm^3

$C_A = -(1.25 \pm 0.04) C_F$

time reversal invariance!

(ii) π-μ-e

K-μ-e

hyperons

$\rho \simeq 0.736 \pm 0.02$

$\mu^+ \rightarrow e^+ + \nu + \bar{\nu}$ $\uparrow (\rho = \frac{3}{4})$

particle: e^-, ν, μ^- anti-part: $\bar{\nu}, e^+, \mu^+$

$\pi^+ \to \mu^+ + \nu$

500	Λ^0's	no lept. decay
103	Σ^-	no μ
		no el.
41	Σ^+	no el.
34	$\Sigma^\pm$	16 π's

1500 hyperons — 1/2 μ, 1/2 e /1500

Telegdi: μ-capture $\dfrac{|C_{GT}|}{|C_F|}$

Goldhaber, Neutrino capture
1/54

two comp theory ~10

Davis
Cl → Ar

Michel : Weak Interaction

Leptonic Modes

$n \to p + e + \bar{\nu}$ $\qquad \bar{\nu} + p \to n + e^+$

$\mu \to e + \nu + \bar{\nu}$

$\mu + p \to n + \nu$

$\pi \to \mu + \nu$ $\qquad \pi \to e + \nu \qquad \pi \to e + \gamma + \nu$

$K \to \mu + \nu$ $\qquad K \to e + \nu$

$K \to \mu + \nu + \pi$

$K \to e + \nu + \pi$

V - A

CP inv.

$\uparrow \qquad \downarrow$

$\nu \qquad \bar{\nu}$

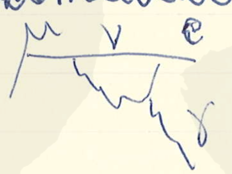
CPT

μ polarization

$(CS)^2 = 1$ $\qquad n + \bar{p} \to e^- + \bar{\nu}$

$\downarrow \; \bar{p} + n \to$ ''

intermediate boson theory



$\mu \to e + \gamma$

$\Lambda \to p + e + \nu$ $\qquad 1.5\%$

$\to p + \pi$

primum : elec. mag. int.

$\mu \to e + \nu + \bar{\nu}$

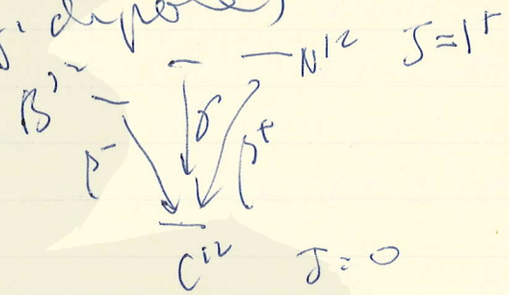
Gell-Mann

[electromag. interaction
[weak V-coupling

V-allowed Δ

forbidden $\Delta J = 1$.

(mag. dipole)



$\bar{p}\gamma_{\mu n} + \sqrt{2}\left(\bar{\pi}^+\frac{\partial\pi^+}{\partial x_\mu} - \bar{\pi}^-\frac{\partial\pi^-}{\partial x_\mu}\right) + \ldots$

A-allowed $\Delta J = 1$

forbidden $\Delta J = 1$

new spectr. $= (1 + aE)\,\text{old}$

Oppenheimer:

$\pi^+ \to e^+ + e^+ + e^-$

July 5, Morning

Non-leptonic decay:

Glaser: experiment

i) life-time

$\Sigma^{\pm}$:

ii) branching ratio

$\frac{\Lambda^0 \to \pi^- + p}{\Lambda^0 \to \pi^0 + n}$: $\Delta I = 1/2$

$\theta^0 \to \frac{\pi^+ \pi^-}{\text{All } \theta^0} = .07 \pm .03$ (.16 if $|\Delta I| = \frac{1}{2}$)

.03

$\Sigma^+ \to \pi^0 + p$

iii) spins

π^-

θ^0 — π^-, π^+

Λ^0 — π, p

Spin $\Lambda^0 = 1/2$

Spin $\Sigma^- = 1/2$

Spin $K^+ = 0$ (2?)

iv) Parity Violation

Λ^0-asym.: $|\alpha| \geq 0.67 \pm 0.13$ / 0.73 ± 0.14

Σ^--asym.: no! 0.04 ± 0.13

$\Sigma^{\pm}$ asym. ?

Σ^{+}: no asym.

Σ^{0}: $|\alpha_{\Lambda^0}| = 0.17 \pm 0.17$

$K^- + p \to \Sigma^{\pm} + \pi^{\mp}$

Scattering:

Λ^0: $\alpha = -(0.85 \pm 0.15 \pm 0.21)$

If $|\alpha| \geq 0.45$ (96% confidence 2 to 1 odds)

MIT: $\alpha < 0$

Berkeley: $\alpha > 0$

v) Mass of Σ^0

$\Sigma^0 \to \gamma + \Lambda^0$ $\quad Q = 75.3^{+0.9}_{-1.9}$ MeV

$M_{\Sigma^0} = 1190^{+0.9}_{-1.9}$ MeV

vi) K_1-K_2-Problem

vii) Ξ^- (artificial) $\quad \Theta^0 \to \bar{\Theta}^0$: Λ^0

two cases (P.C.)

$\sim 10^{-10}$ sec

$/\Lambda^0$

Treiman: theory

$\Lambda \to p + \pi^-$:

$M \to f\, G_F \bar{\psi}_p (1 - \gamma_5) \psi_\Lambda \to A_S + A_P \vec{\sigma}\vec{p}$

$w(\theta)\, d(\cos\theta) = \frac{1}{2}(1 + \alpha P \cos\theta)\, d(\cos\theta)$

$\alpha = -2\,\mathrm{Re}\,\frac{A^* P}{|A|^2 + |B|^2}$

$\frac{A_P}{A_S} = -.052\, P$

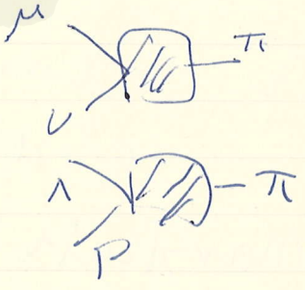
$|\alpha| > .7$: C.P. inv. is violated

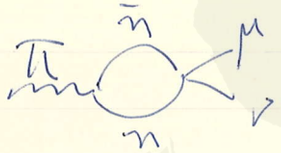
$\pi \to \mu + \nu$ $(V-A)$

$M = f_\pi \bar{\psi}_\nu (1+\gamma_5) \psi_\mu$

$\to M_\Lambda = f_\Lambda \bar{\psi}_p (1+\gamma_5) \psi_\Lambda$

$\to P = 11.7$ $\quad |\alpha| \approx 0.9$





$(\bar{p}\Lambda)(\bar{n}p)$

Λ + nucleon → nucleon + nucleon

Dalitz $\quad \Lambda \to H^4 \to \pi^- + He^4$

$R_{exp} = \frac{\Lambda \to H^4 \to \pi^- + He^4}{\to \pi^- + \text{anything}} = \frac{13}{211}$

for spin 0: $R \leq 0.25$

$\left|\frac{A_P}{A_S}\right| < 1$

Σ-decay:

τ-decay: $\Delta I \neq 1/2$

$\Delta I = 1/2, > 3/2$

very strong: $\Delta I = 1/2$
medium strong: $\Delta I = 1/2, 3/2$

K_2 : time reversal invariance
absence of 2π-decay mode

Marshak:

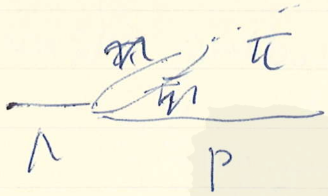
$L = \bar{\psi} \gamma_\mu (1+\gamma_5) \psi$

J = strangeness conserv.

J = strangeness non-cons.

L μ-decay
J L n-decay
J L $K \to \pi + \mu + \nu$
J J $\Lambda \to p + \pi^-$
J

$\Delta S = 1/2$ $\Delta S = 1$ → $\Delta J = 1/2, 3/2$



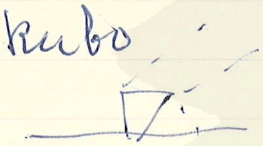
branching ratio 0.6

$\alpha = 1$

$\alpha < 0$ for proton

$\simeq 0.88$

Okubo



K_2^0;

$K^+ \to \pi^0 + \mu^+ + \nu$ . . . .

K_2^0 : $\tau \simeq 6 \times 10^{-8}$ sec

$\tau < 7.5 \times 10^{-8}$ sec

Okun

$K^+ \to \pi^0 + \mu^+ + \nu$:

$\partial_\mu J_V^\mu = 0$

$\partial_\mu J_A^\mu = 0$

$\partial_\mu J_V^\mu = 0$

$\downarrow$

$\frac{K_{e3}}{K_{\mu 3}} > 1$

spectrum

(Yonezawa, Furuichi, ..
⋮

Takeda: asymmetry

Σ

Λ^0

Yamaguchi :

Oppenheimer, Concluding Remarks

$$F = \int_{M_{real}} \frac{d\sigma^2}{(\quad)} \rho(\sigma^2)$$

Visit to Torino

July 9 ~ 10, 1952

Prof. G. Wataghin, Istituto di Fisica
dell Universita - Torino
(Torino, population over 700,000)

July 9 ~~Arrive~~ Sumi, Dr. T. Tokoda
Geneva ~ Milano ~ Torino
13 hr. 20 hr
Wataghin, Giorgio, Chapiro
Brazilian resident
Grande Albergo di Piemonte Nr. 11-1
Lagrange was a native of Torino,
half French, half Italian.
Statue of him in a place, quart
near the station
Avogadro was the first physicist
of the University,
University is very old only
next to Bologna, Paris
and Pavoa.
Ristorante ~~Casino~~ Cascine
near the Castle, Stupinigi
Fiat factory

July 10
9.30 : Wataghin comes.

Topics of the talk:
(1) Non-locality and Non-linearity
I raise questions rather than to answer them !!!
cut-off : relativistic Wataghin 1934
$|(\Delta E)^2 - (\Delta p)^2| \lesssim (\hbar/\ell)^2$

Heisenberg
a) non-locality
state-dependent
one particle state
general state
causality
macrocausality

b) Non-linearity
fictitious particles
→ indefinite metric
→ non local interactions

doubt
c) Composite particle model
$\pi \left(\begin{matrix} \nu \\ \bar{n} \end{matrix} \right) \mu + \nu$
$\pi \left(\begin{matrix} \Lambda \Sigma \\ \Xi \end{matrix} \right) \mu + \nu$
compensation !!
per e or

~~Unified~~ Concept
(2) a) Electromagnetic field
b) gravitational field

We discussed with
G. Wataghin
R. Ascoli
E. Minardi
(Fiorini)
M. Verde
(A. Achenedetti)

L. Gonella
betatron
bubble chamber (gas bubble chamber)

In the evening
Wataghin takes us up the ~~to~~ hill.

July 11 : Morning : Institute of Physics, Torino
12.58 : ~~Genè~~ Torino via Aroma
20.11 : Geneva

R. Ascoli and F. Minardi,
Nuovo Cimento 8 (1958), 951

Visit to Brazil

~~out~~ July 14 ~ August 1

July 13: Swissair 17.05 Geneva
July 14: 11.00 Rio 13.00 São Paulo
G. Beck, University of Rio de Janeiro
Schönberg, University of São Paulo
M. Taketani, Institute of Theoretical Physics
Y. Katayama,

K. Yamamoto 山本　　50年祭協賛会,
K. Ando 安藤.
Tsukamoto 塚本.

July 14 16.00 ~ 17.00 press interview

Rio: National Research Council
São Paulo:
~~Inst~~ Instituto de Fisica Teórica, Rua Pamplona 145
(Tel. 35-7388)

在留民五十年祭 6月 ~ 9月.
藤森喚去 東北大. 林(?)

Claridge Hotel
Avenida 9 de Julho, 210
Tel: 35 ~ 9131/7
~~N. 12~~ Apartamento N. 130
サンパウロ総領事: 鈴木耕一

July 15, Tuesday

10: Instituto de Física Teórica
Rua Pamplona 145, São Paulo
Talk with Ferreira brothers
and a few others

14: Visited Cidade Universitaria
(5 million square meters)
Reactor: swimming pool
5 megawatts
force cooling by circulation
~~Prof. Damia~~ Prof. Marcelo Damy de Souza Santos
rabbit

Van de Graaf 3.5 MeV
Betatron 22 MeV
Prof. ~~Sala~~ Oscar ~~Oswaldo~~ Sala
Butantan 毒蛇研究所

Visited Faculdade de Filosofia,
Ciências e Letras
Universidade de São Paulo
met ~~Dean~~ Vice Rector Amola
with Schönberg.
Very much tired, do not feel well

July 16, Wednesday
Postponed the talk for the colloquium at the University of São Paulo, stayed at the Hotel Claridge Rm 51.
Doctor came and gave drugs.

July 17, Thursday

15: Visited Rector Gabriel with Amoia, Schönberg, Takeuchi, Katayama

17: Colloquium
lecture I: Present status of Field Theory with particular emphasis on the non-linearity and non-locality in field theories
Schönberg presiding
Güttinger
Schultze
Sala
Roberto?

July 18, Friday
10 ~~a.m.~~: Visit Shizuko-mura (San Bernardo)
Short speeches
Ando, Taketani, Yukawa

200 pkg-12

18 p.m: Welcome party by 50 years' Ceremony Committee (Shin-Tokiwa)

20.30: Public lectures in Japanese at Plaza Mana
Taketani, Science and World
Yukawa, Present Situation of ~~Japan~~ Physics in Japan

July 19, Saturday
10: Visit Institute for Theoretical Physics
Informal discussions on weak interactions, future of field theory etc.

G. Ferreira
Zimmerman

Wunt
Ferreira

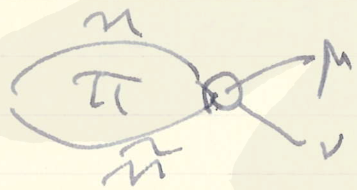
P. Roberto

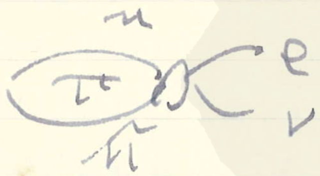
Yukawa: Inadequacy of simple composite model for π:

composite model for π

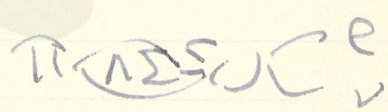
unified non-linear theory
?

π as elementary particle

(1)


(2)


add together, while



may compensate with each other

(2) cannot be much smaller than (1), because (2) is directly connected with the β-decay interaction
$n \to n' + e + \nu$

Taketani:

(1) $\pi \to \mu + \nu$
$K \to \mu + \nu$
$\to \pi + e + \nu$
$\to \pi \to \mu + \nu$

$\pi \to e + \nu$
$K \to e + \nu$ (2)

How to understand the smallness of (2) compared with (1).
Derivative coupling → Non-locality.

Yukawa: Two main lines of thought in field theory
conventional theory
i.e. local q.f.t →
generalization of field concept
non-local field or interaction

local f.t in Hilbert space with indefinite metric
↓
Hilbert space with definite metric, ~~ordinary~~ non-local theory

breakdown of field concept?

cut-off dependent on the state of the system

mutual limitations between space-time and ~~matter~~ matter

quantizable part → particle in the narrow sense

and non-quantizable part → fictitious particles or space-time structure

Yukawa: Organization of our Institute

	1953	1958	final state
Director	1	1	1
Professor	2	3	5
Assistant Prof.		2	6
Assistant	2	4(+1)	8 12
Secretary	3	about 10	12

Advisory committee 16
senior physicists (8 K.U.; 8 outside)
Committee for Research Projects 30~40
~~Organize~~ decide and organize Symposia.
Committee for ~~the~~ editing and publishing Progr. Symp.
Mimeog. journ. in Japanese.

July 19. [illegible]
Cocktail Party at the residence of Consul general

July 20, Sunday
Visit Fazenda Monte d'este, Campinas about 2 hours' driving from São Paulo
(1,600 ミリ, 4,000 キロ)

Stay overnight at Yamamoto's Residence

July 21.
Prepare for the semi-popular lecture at the University of São Paulo (Institute of Engineering in the building of Palacia Mauá) on "Elementary Particle"

4 p.m. leave Campinas for São Paulo

8.30 p.m. lecture at São Paulo University. Prof. Mario Schönberg translating "Elementary Particles"

July 22.
10 a.m.: Institute for theoretical Physics met Profs. G. Jacob and D. Dillenburg of University of Rio Grande do Sul.

8 p.m. Dance by Mrs. Yukawa at Paramount theatre

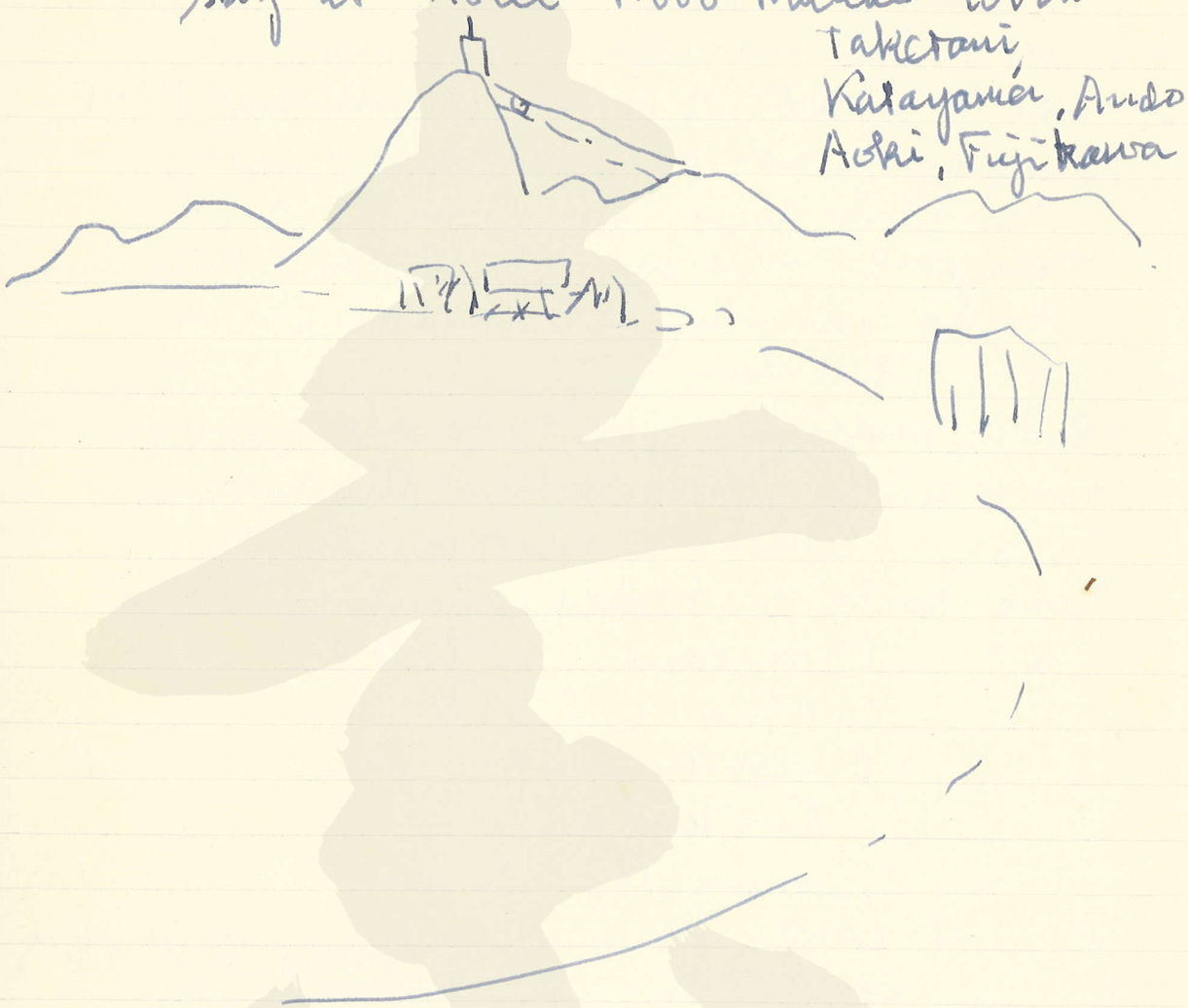
c033-520～522挟込

July 23, Wednesday
Headache, tired, do not feel well.
Doctor Takeda came to enquire.
Answer to Ministry of Foreign Affairs about PUAE.
Colloquium at the Institute of Physics,
São Paulo University from 5 p.m.
Katayama talk on Ascoli and Minardi's
paper on indefinite metric.

July 24, Thursday
10.30 midnight went to see African
dance with Yamamoto, Miyawaki,
Saito, Taketani, Katayama *.
Came back to Hotel about 2.3 a.m.
* 1. Dora canto e ballet
cantor solista
cantora 〃
2 Macumba
2. Dança Africana
cantó
cantora
caferal
Evening: 記者會. (サンパウロ新聞 [illegible]) (武谷、広山、山本、菊地、佐藤(?))

July 25, Friday (São Paulo)
Leave for Rio by Real
with Taketani, Katayama, Ando, Schönberg
Fujikawa, Aoki
Arrive Rio 6 p.m.
Stay Novo Mundo Hotel
Cough, Doctor Takahashi came to
enquire

July 26, Saturday
Stay at Hotel Novo Mundo with
Takeuchi,
Katayama, Ando
Aoki, Fujikawa



20 hrs. : Dinner at Ambassador Ando's
Residence
Ishiguro and his associates

July 27, Sunday.
Stay at Hotel Novo Mundo
11 a.m. Prof. Schönberg
Prof. Beck
6 p.m. Prof. Lopes

July 28, Monday
Clear, very warm

12.30: Visit Prof. Cristovão Cardoso,
President of National Research Council
(Conselho Nacional de Pesquiza)

1 p.m. luncheon invited by E. M. Soares,
~~Sec~~ Presidente, Centro Brasileiro de
Pesquisas Fisicas at Clube dos
Caiçaras (Fisherman's Club)
4 p.m.: C.B.P.F.
5 p.m ~ 6 p.m.: lecture on
"Non-linearity and Non-locality
in Field Theory" at C.B.P.F.
Prof. Beck presiding.

July 29, Tuesday
Luncheon by Mr. and Mrs. Takahashi and Mr. and Mrs. Yoshioka of Tokyo Bank
with Taketani, Tatsuyama
at Yacht Club
16 óc.: lecture at Conselho Nacional de Pesquiza on "Physics in Japan"

20 óc: Dinner at Mario Pedrosa, an eminent art critic, with Schönberg

July 30, Wednesday
Profs. Beck and Carballo took us to "Tijuca Forest. Luncheon at the "Restaurant in the Forest". Then to Corcovado (700 m) with Statue of Christ the Redeemer. The view of Rio is magnificient!!!
Small meeting at Beck's house in Copacabana. Dinner with Beck, Mr. and Mrs. Wassermann at an austrian ~~restaurant~~ club (Backhendel)

July 31, Thursday
Sami caught cold and stay at the hotel.
13: luncheon by Prof. Cardoso, Pres. N.R.C.
with Captain Afranio de Faria, Representative de the President of Brazil.

Aug. 1, Friday
9.30 a.m.: Visit President of the Republic of Brazil: Juscelino Kubitschek
with Profs. ~~Cor~~ Cardoso, Schönberg and Lopes.
leave ~~letter to the~~ Message to the President relating to ~~the~~ physics in Brazil and exchange of physicists between Brazil and Japan.
By
3.00 p.m.: PAA plane, leave Rio for Buenos Aires, stopping at São Paulo, Porto Alegre, Montevideo.

Visit to Argentine
August 1 〜 August

Aug. 1. PAA plane arrives in Buenos Aires a little before 11 p.m.
Ambassador M. Tsuda came to the airport and gave special direction issued by the President of the Republic of Argentine: Frondizi Luis R. Mac Kay

Stay at Plaza Hotel in front of the Plaza Libertador, Gr. (General) San Martin.

Aug. 2. Get up about 9.30.
No room service, because of "gastronomical day".
Lunch with Ambassador M. Tsuda.
16. o'cl: Speech at Asociacion Japonesa en la Argentina, Calle Patagones 840.
20.00 Dinner party at Ambassador's (津田大使) residence with Sako (佐甲三郎)
Fukai (深井龍雄、信子)
Nara (奈良明男) Irie (入江勇二)
Goto (後藤竜一) and other.

在留邦人 アルゼンチン全体で約15,000人
その中 10,000人以上がBuenos在住.
大部分は花屋と洗濯屋.

Aug. 3, Sunday　　Clear
11.30〜13: Go around the town of Buenos Aires with Kitagawa of the Embassy: ~~La Plata~~ La Plata River — Port — 水[illegible]地 — Park (Palermo) — University (Law School, Medical School) — Obelisk — Avenida 9 de Julio — Physics Department — Plaza Mayo — Government Building — Cathedral
[illegible]街なり
13.30: Hotel Plaza で Kitagawa 氏と三人で昼食.

Aug. 4, Monday
10: shopping　Florida street

11: Commission of Med. Drs against Nuclear Weapons

12: Press Interview

16〜18: AEC (NCEA)
Dr. F. Alsina Fuentes
President Helio López

Dr. J. F. Westerkamp

Synchrocyclotron (made by Phillips)
30 MeV (proton)
50 MeV (α-particle)
Cockcroft-Walton (Phillips)
1.4 MeV
small C. W. 200 keV
mass-spectrometer
β-ray spectrometer (Jensen type)
γ-ray β-γ-coincidence
β-β-coincidence
~~cosmic ray~~ Emulsion scanning ; K_2^0-particle (Tata? Brookhaven)
reactor (Argonaut)
another small reactor
50 scientists (20 physicists)
Production of
1 physicist per year from all
universities
O Bariloche (~~from~~ established three years ago)
13 physics students every year
selected from ~~university~~ students who
finished second year

9.30 p.m. Teatro Colon
Orquesta Sinfonica Nacional
conducted by Juan José Castro

Aug. 5, Tuesday
10 a.m. Mr. Nara
Flowers of Bird of Paradise

5 p.m. : ~~Meeting~~ President (Rector) Flondizi of
University of Buenos Aires. He is
~~Univers~~ younger brother of the
President of the Republic.
University has many ~~Fo~~ Faculties,
students totaling 40,000
was built early in 19 century.
Largest in South America
Participation of students
and alumni to the administration
~~goes~~ went to extreme!!!,
~~sta~~ professors : students : alumni
= 1 : 1 : 1

5.30 p.m. : Meet President Flondizi of
the Republic of Argentine
at the Government Building
with Amb. Tsuda
talk about the exchange of
scientists between Arg. and
Japan.

6 p.m. ~ 7.30 p.m. : First lecture at
Faculty of Exact Sciences ~~ove~~
(Peru 222) ([illegible]) entitled
"Elementary Particles"

8 ~ 10.20 p.m.: Reception at Ambassador's Residence inviting people from academic circle.
Presidents of University, Academy and N.R.C. and deans of Faculties of Universities, Professors.

Aug. 6, Wednesday
11 a.m.: Recording of short wave broadcast overseas service (in 6 languages (Radiodifusion Argentina al Exterior, Palacio de Correos, Buenos Aires, Republica Argentina) (RAE) (Broadcast 8 ~ 9 in the evening)
Answered questions.

13: Lunch at Mr. T. Fukai's residence with Goto and Drs.

18 ~ 19.30: Lecture at the Faculty of exact and Natural Sciences of the University of B.A. on Fundamental Problems of Field Theory

22 ~ 2 (Aug. 7): Theatro Avenida (Spanish dances and songs) and another smaller theatre with Mr. and Mrs. Fukai.

Aug. 7, Thursday
11.30: National Research Council
(President Houssay)
13: lunch with members of NRC
at City Hotel
15.30: Official Visit to Parliament
met Chairman of lower House

19.30: Reception by Ministry of
Education at the Museum of
Decorative Arts.
22～24: Dinner at Dr. Westerkamp's
house.

Aug. 8, Friday
Morning: prepared for the third lecture
on symmetry in physics

16～17.30: lecture at NCAE
on "Symmetry in Physics"

18.15: Radio broadcast
greeting to Argentine ~~people~~
public
19～20.30: Talk on Education in
Japan (in particular, Science
Education in Japan) by

answering questions through professor Bunge

21~21.30: Cocktail Party at Rector Risieri Frondizi's Residence (Junin 1925, 10th Floor)

22~24: Dinner party by Niseis who graduated from universities.

Aug. 9. Saturday

noon: Asado at ブルサコ

Folk dance by Niseis
Visit Florists Ikari and Nakamura

Evening: No schedule

Aug. 10, Sunday

11.30: Invitation to the meeting of Academia Nacional de Ciencias Exactas, Fisicas y Naturales de Buenos Aires with Ambassador M. Tsuda. Introduction by President Abel Sánchez Diaz,

Speech by Dr. Bernardo A. Houssay.
few words of gratitude by myself.
This was the first time for the Academy to meet on Sunday.

13: lunch at Fukai's apartment.
Drive to Olivos, a nice residential section, see Theatro Nacional, with Fukais.
20: Dinner at Ambassador's residence.
22: Mr. Kato took us to gay districts.

Aug. 11
10: Go to la Plata with Alsina, Westerkamp, Fukais, Miss Chieko Tsuda.
Give lecture on "Elementary Particles". Introduction by Grinfeld translation by Westerkamp.
Visit Rector of the University of la Plata.
13: Lunch at Jocky club.
15: Visit la Plata Museum.
archeological animals: Skeletons of large reptiles, whales.*
Indian cultural remains

* whales 30米 or larger

19: Farewell greetings to ~~Pr~~ Rector of University of Buenos Aires
18.10: Farewell greetings to President's deputy at ~~Gov~~ Presidential House.
19: Ambassador and Mrs. Tsuda come to say good-bye to the Hotel.
21.30 ~ 22.30: Meeting at Faculty of Exact Sciences of the University, on the movement against ~~A and~~ nuclear weapons with Bunge. Answer questions ~~by~~ through Alsina.

Aug. 12, Tuesday
Get up at 5:30
leave Plaza Hotel at 6.30 with Nara, Sakai, Kitagawa Irie.
8.30: Swissair left ~~Gondo~~ Buenos Aires Airport ~~about 9.30~~
Stopped at São Paulo, Rio de Janeiro, Recife

Aug. 13, Wednesday
Stopped at Dakar (rain, warm), Lisboa
Arrived Geneva airport about 7 p.m. Consul General S. Sato, etc
~~Dr.~~ and Mrs. Y. Yamaguchi
~~go to~~

Stay in Geneva II,

stay at Hotel d'Angleterre, Rm. 433 again

Aug. 14, Thursday
9.30: Minister Kawasaki visit us ~~to~~ at our hotel discuss about ~~to.00:~~ reception on the occasion of ~~A~~ PUAE in September
10.00: H. Fukunaga, Technical Official Atomic Energy Bureau Science and Technics Agency of Japan, temporarily serving UN ~~for PUAE~~ as secretary for PUAE.
T. Oyake, Attaché d'Ambassade Member of Permanent delegation of Japan in Geneva.
Watari, for Exhibition at PUAE
15.00: Dr. S. Nakamura talks about his work with Yamasaki and about invitation of Japanese theoretical physicists to Italy.

19.30: Dinner at Minister's Residence with Oyake.

Aug. 15, Friday

10: Go to Consulate General with Nakamura
A room is prepared in Consulate.

16: Go shopping, buy jacket and light suitcase at Passage department store with Mrs. Yamaguchi and Mrs. Kudo.
Haircut!!!

20: Dinner with Mr. and Mrs. Y. Yamaguchi at the terrace of Hotel d'Angleterre, looking at Fêtes de Genève;
Cortège et Folklore.
(Grands bals en plein air)
(Bataille de confetti, Concert)

Aug. 16, Saturday

12 ~ 16: Lunch at Tam-Tam Club and look at Grand Corso Fleuri.
行ったり来たり窓の下を花の車馬なんかが。ひっきりなしに音楽をさせるのでやかましい。

21 ~ 22: Look at the Firework at the terrace of the hotel.
Confetti — Music (— until 4 o'clock in the morning)

World Affairs

- ○ Iraqui 革命, 皇太子・首相殺害される
- ○ Lebanon へ米陸戦隊上陸.
- ○ Jordan へ英軍出兵
- ○ UN security Council
- ○ UN emergency General Meeting
  Aug. 13: Eisenhower proposes "stand-by UN peace unit"
  Gromyko refutes
- ○ Plane crashes
  Japan 全日空・名古屋行の飛行機 伊豆半島で墜落
  KLM Ireland 西方で墜落.
  and a number of other crashes
- ○ Prof. Joliot-Curie died on Aug. 14, 1958 perhaps due to radioactivity.
- ○ Swiss ~~H~~ 政府が核兵器を持つことを決定?

- ○ Aug. 22: President Eisenhower proposes A-test suspension beginning from Oct. 31 for one year.

Aug. 21: Arab proposal relating to middle east passed UN general assembly by 80 to 0.

Aug. 17. Sunday, fine and warm just as these few days.
Get up at 10:30, breakfast at 11.
Begin to correct the ~~manuscript~~ proof sheets of "Traveler" which appeared in from March to July in Asahi, (Nr. 19 ~ Nr. 36)

Aug. 18, Monday, fine
10:30: Go to the office in Consulate General with Semi.
Lunch with Yamaguchis
Send corrected proof of "Traveller (Nr. 19 ~ 36) to Asahi, Tokyo.

Aug. 11, Tuesday, heavy rain, cool
Stomachache, stay at the hotel, proof reading of "Traveller" (Nr. 37 ~ 91)

Aug. 12, Wednesday, cloudy, cool
10: Go to Consulate general.
Meet Nakamura
13: Lunch with Kudo and So.
14: Prepare for TV (BBC)

c033-548～552挟込

国連科学委員会報告 概要
(読売新聞 Aug. 11, 1958)
15ケ国、2年間 228頁. 8月10日発表
委員会は核実験即時中止をもとめるソ連案を否決
(賛成 ソ連. チェコ. アラブ連合共和国. (3)
反対 米. 英. 瑞典. メキシコ. 日. 仏. カナダ. ブラジル.
アルゼンチン. オーストラリア (10)
棄権 ベルギー. インド (2))
インド案. "汚染の増加は有害でこれを避ける必要あり、
その主な原因は核実験である" 否決
(賛成: 米. ブ. 仏. 印. 日 (5)
アルゼン. オーストラリア. メキシコ. 瑞. 英 (5)
ベルギー, カナダ. チェコ. ソ連. アラブ (5))
決定案
核爆発が世界の放射能水準を高めている.
これまでの知識は放射線をうけた人の害ではどう
にもならぬ.
人類が放射線を受ける量を最小限にとどめる
ためあらゆる手段を講ずべきである.
一方では医学・工業その他の平和利用による
必要以上に放射線を受けることをさけよ.
他方では核爆発による環境の汚染をとめる.
(委員会の仕事の範囲外の)
これ等の問題の解決は国家的国際的措置
をとらなければならぬ.
代表: 日: 都築正男. 田島英三.
ヌネス(ア), スチーブンス(オ), バーク(ベ). シャガス(ブ)
ワトキンソン(カ) ヘルチク(チェ) ハラワニ(アラブ)
ビュニャール(仏) カメルカー(印) バエス(メキシコ)
レーバート(スェーデン) レベジンスキー(ソ) ポーチン(英)
ウレン(米)

Visit to Belgium, Netherlands
Aug. 21 ~ 29, 1958

Aug. 21

Leave Geneva airport by Sabena 658 at 13 hr. ~~4~~, Yamaguchi and Kudo seeing off. raining
~~12~~.15 hr. arrive Brussels airport
Mr. Yano of Embassy
Go to Palace Hotel (Rm 121)
Go to Exhibition Universal.
Press Club — Science Hall
Television interview ~~in Flemish~~ with Sumi and Gordon Taylor.
Japanese Pavillion — Tsuruya (Osaka) Keiko
— JETRO — look around
Spanish Pavilleon — Spanish dances
— look around — meet Kasario (Miss).
go back to hotel about 23 hr.

Aug. 22 Friday

Stay ~~Hotel~~ Palace Hotel in the morning
Take lunch with Gordon Taylor at the hotel.
Go to Science Hall for rehersal of BBC television.
Dinner with Singer and Taylor at French Pavillion.
Television performance from 22.45 to 23.

Aug. 23. ~~Friday~~ Saturday
leave Brussels North station by
ETT at 10.30 for Amsterdam
where we arrive at 13.14. Mr. Yoshioka,
~~of~~ Deputy Ambassador, came to meet us
at the station.
Take lunch at the restaurant Lido
near the canal with Yoshioka.
Visit ~~Rijksmuseum~~ (Rembrandt,
Vermeer etc) and collection of
van Gogh in Stedelijk Museum.
17 ~ 18.25 : (about 80 km)
Drive to Hotel de Bilderberg in
Oosterbeek by embassy's car.
Through beautiful woods !!!
Take dinner with Yoshioka at
the hotel, where many guests
with their family could be seen.

Aug. 24 Sunday
10 : Summer Conference of WAWF
(World Association ~~for World~~ of
World Federalists) open
at Pietersberg, Oosterbeek.
~~Stanley~~ Plenary session, Stanley
Presiding. Short speech
by myself on behalf of Jap. Ass.
for Est. of W F.

Aug. 28, Thursday
10: leave Hotel de Bilderberg for Hage. Through Utrecht
Looking at Cathedral with high tower over 100 m
13: lunch with Yasuokas at Ambassador's residence near Hage
15: Visit Dr. van den Handel of Kammerling Onnes laboratorium Nieuwsteeg 18, Leiden.
liquid Nitrogen — liquid Hydrogen — liquid Helium (3 litre/hour)
Onnes succeeded in 1908 here.
Zeeman's experiment
Lorentz Institute for theoretical Physics — Ehrenfest
— Kramers. — Groot?
— Casimir
17: Arrive at Palace Hotel near the sea-shore outside the town of Hague.
Peace — Palace
Fireworks