Welcome Address

Hideyo Kunieda

Vice President, Trustee

Nagoya University

NAGOYA UNIVERSITY

Opening Remarks

Toru Iijima (FPCP2015 chair)

Kobayashi-Maskawa Institute

Nagoya University

NAGOYA UNIVERSITY

Kobayashi-Maskawa Institute
for the Origin of Particles and the Universe

FPCP History

1. 2002 Philadelphia
2. 2003 Paris
3. 2004 Dageu
4. 2006 Vancouver
5. 2007 Bled
6. 2008 Taipei
7. 2009 Lake Placid
8. 2010 Torino
9. 2011 Kibbutz Maale Hachamisha
10. 2012 Hefei
11. 2013 Buzios
12. 2014 Marseille
13. 2015 Nagoya

BCP (B Physics & CP Violation)

- BCP1 (1994), BCP4 (2001) hosted by Nagoya

Flavor Physics Conference

➡ Merged into FPCP series

Flavor physics at Nagoya Univ.

- Sakata Model (1956) → Quark model
- Maki-Nakagawa-Sakata (1962) → PMNS
- Kobayashi-Maskawa theory (1973) → CKM
- Prediction of large CPV in B decays
  - Carter, Sanda (1980)
  - Bigi, Sanda (1981)

S. Sakata

A simpler and more elegant scl
constructed if we allow non-integr
charges. We can dispense entirely
baryon b if we assign to the triplet
properties: spin $\frac{1}{2}$, $z = -\frac{1}{3}$, and bar
We then refer to the members u, d, s,
the triplet as "quarks" [6] q and the
anti-triplet as anti-quarks $\bar{q}$. Baryons can now be constructed from quarks by using the combinations $(q\,q\,q)$, $(q\,q\,q\,q\,\bar{q})$, etc., while mesons are made out of $(q\,\bar{q})$, $(q\,q\,\bar{q}\,\bar{q})$, etc. It is assuming that the lowest baryon configuration $(q\,q\,q)$ gives just the representations **1**, **8**, and **10** that have been observed, while the lowest meson configuration $(q\,\bar{q})$ similarly gives just **1** and **8**.

A formal mathematical model based on field theory can be built up for the quarks exactly as for p, n, Λ in the old Sakata model, for example [3] with all strong interactions ascribed to a neutral vector meson field interacting symmetrically with the three particles. Within such a framework, the

Gell-Mann paper (1964)

Kobayashi-Maskawa paper (1973)

CP-Violation in the Renormalizable Theory of Weak Interaction 657

Next we consider a 6-plet model, another interesting model of *CP*-violation. Suppose that 6-plet with charges $(Q, Q, Q, Q-1, Q-1, Q-1)$ is decomposed into $SU_{\text{weak}}(2)$ multiplets as $2+2+2$ and $1+1+1+1+1+1$ for left and right components, respectively. Just as the case of (A, C), we have a similar expression for the charged weak current with a 3×3 instead of 2×2 unitary matrix in Eq. (5). As was pointed out, in this case we cannot absorb all phases of matrix elements into the phase convention and can take, for example, the following expression:

$$\begin{pmatrix} \cos\theta_1 & -\sin\theta_1\cos\theta_3 & -\sin\theta_1\sin\theta_3 \\ \sin\theta_1\cos\theta_2 & \cos\theta_1\cos\theta_2\cos\theta_3 - \sin\theta_2\sin\theta_3 e^{i\delta} & \cos\theta_1\cos\theta_2\sin\theta_3 + \sin\theta_2\cos\theta_3 e^{i\delta} \\ \sin\theta_1\sin\theta_2 & \cos\theta_1\sin\theta_2\cos\theta_3 + \cos\theta_2\sin\theta_3 e^{i\delta} & \cos\theta_1\sin\theta_2\sin\theta_3 - \cos\theta_2\sin\theta_3 e^{i\delta} \end{pmatrix}. \quad (13)$$

M. Kobayashi T. Maskawa I. Sanda

Particle Physics at Nagoya Now

- Belle
- Belle II
- ATLAS
- OPERA (+ DM search)
- Neutron (lifetime, EDM, …)
- Cosmic Ray (SK, LHCf, Fermi, CTA)
- Theory
  - Lead by Professors M. Tanabashi and J. Hisano

Kobayashi-Maskawa Institute (2010~)
- Center for Theoretical Studies
- Center for Experimental Studies

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BELLE

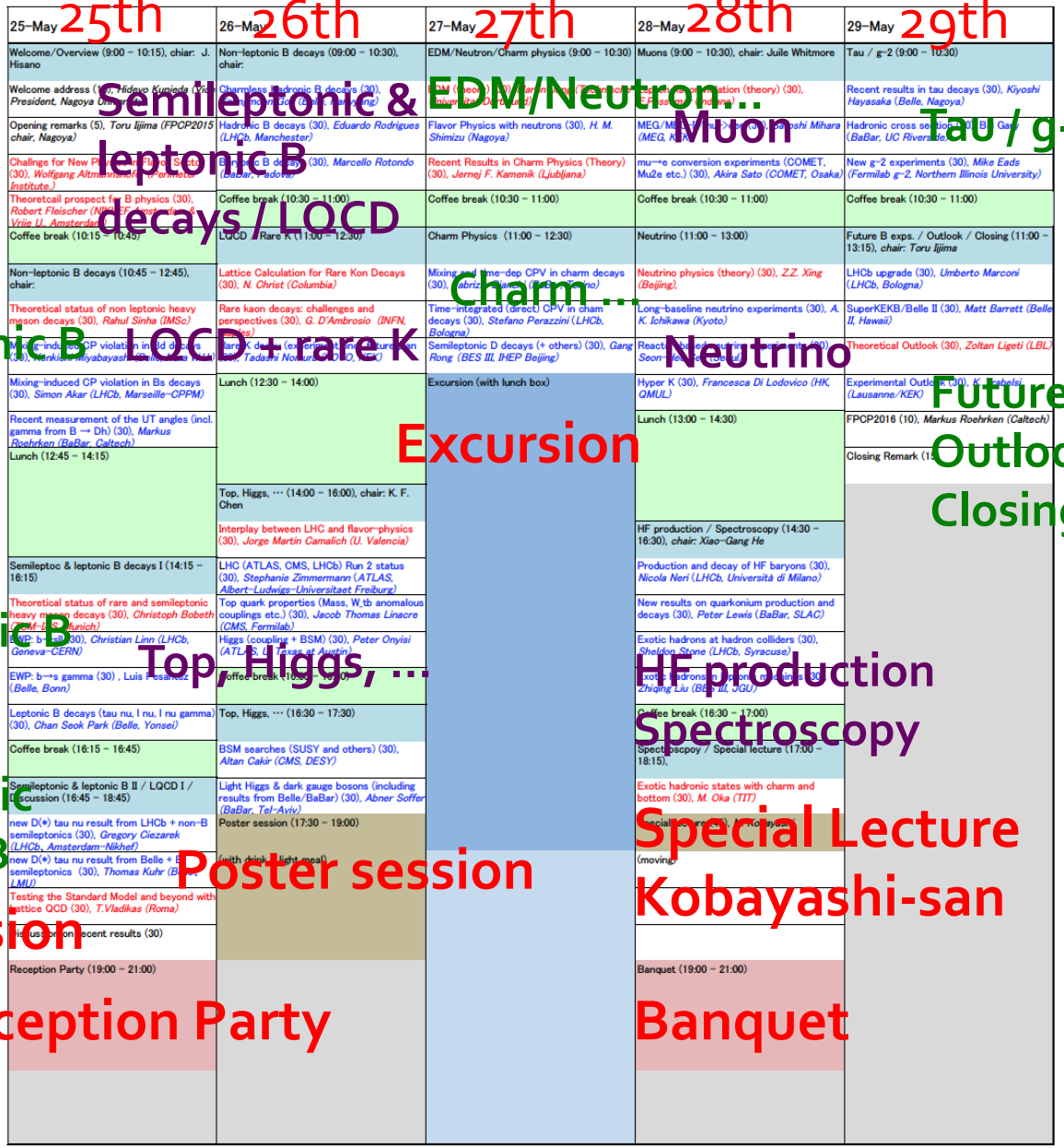
Belle II

ATLAS EXPERIMENT
http://atlas.ch

OPERA

Neutron Optics and Physics

Events in this week



Foods in this week

- Lunch served on the 1st floor (Mon – Fri)
  - Lunch box for everyone on Wed (27th)
- Reception on the 1st floor (this evening)
- Light meals and drinks during the poster session (26th)
- Banquet at Hotel Tokyu on Thu.(28th)
- Coffee / donuts available from 8:30 (Tue – Fri)

Don't worry about foods !

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Enjoy your stay at Nagoya !