



International Workshop on Future Linear Colliders

 LCWS13

11-15 November 2013, The University of Tokyo

# Welcome to LCWS13

# Welcome to The University of Tokyo

## Local Organizing Committee:

Sachio Komamiya (Chair/Tokyo)

Keisuke Fujii (KEK)

Daniel Jeans (Tokyo)

Masakazu Kurata (Tokyo)

Tsunehiko Omori (KEK)

Tomohiko Tanabe (Tokyo)

Yasuchika Yamamoto (KEK)

Kaoru Yokoya (KEK)

Akiya Miyamoto (Deputy/KEK)

Hitoshi Hayano (KEK)

Yoshio Kamiya (Tokyo)

Mitsuaki Nozaki (KEK)

Taikan Suehara (Kyushu)

Hitoshi Yamamoto (Tohoku)

Satoru Yamashita (Tokyo)

# Read the information booklet!

**WIFI**

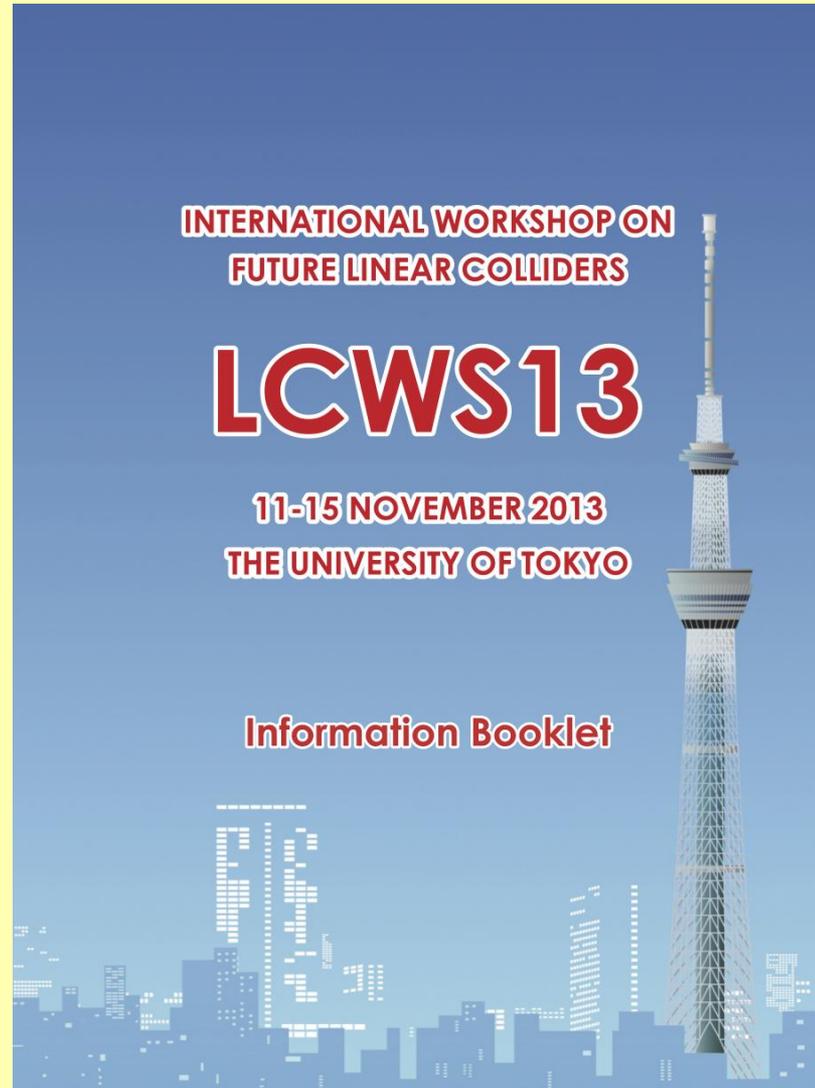
**Coffee**

**Maps**

**Restaurants**

**Banquet**

...





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## Practical Information #1

**Today's program has changed (since last week)**

09:30-12:15 Joint Plenary (LCB, Physics, ILC, CLIC, Detector)

**12:15-12:30 Group Photo**      **Outside of this building**

12:30-14:00 Lunch

14:00-16:00 Split Plenary: Physics & Detector → Stay here  
Accelerator → Fac.Sci.Bldg.1, Koshiba Hall

16:00-16:30 Coffee next to Ito Hall (here)

16:30-18:30 Joint Plenary (LHC, LCC)

**18:00-18:30 Message from Mr. Takeo Kawamura (Diet member)**

**18:30-20:30 Welcome reception** in Ito Hall (here)



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## Practical information #2

### Lunch

Please look at the Information Booklet

#### 3 Cafeterias in the University

Inexpensive but crowded by students

#### Restaurants outside campus

Many small restaurants near the University

Please ask Japanese colleagues or take an  
adventure in exotic dining (not risky)



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## Practical information #3

### Parallel sessions

Information Booklet (**Hongo Campus Map**)

Monday

Koshiba Hall (B) and Ito Hall (F)

Tuesday, Wednesday, Thursday

Concentrated in center of campus A,B,C,D,E,F

**Coffee** locations are in the Booklet

Close to most of the plenary/parallel session rooms



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## Practical Information #4 The most important one

**Banquet** also in the Information Booklet

13 November (Wednesday) 19:30-21:30

Hotel Metropolitan Ball Room Fuji (3<sup>rd</sup> floor)

High quality Japanese cuisine

For vegetarian please show the green sheet in your nametag at the table

Buses start to leave at 18:30 (see Hongo Campus Map)

Bus seats are limited due to the parking place

Please take the metro if you are under 65 and can read Japanese

How to get back to your hotel:

Please use Metro or Taxi (No buses are organized)



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## Practical Information #5

### To Charge your PC

AC 100V / freq. 50Hz (western part of Japan 60Hz)  
PC charging stations are located outside of this hall.

Parallel session rooms have a limited number of outlets.

If you need electricity badly, come to the information desk:  
Today: next to Ito Hall / Tues.-Thurs. Sanjo Conference Hall 2F

**Look for the  
Origami Crane  
in the nametag**

**They are local people  
who can help you!**

**Voucher of the  
workshop is in your  
nametag.**



**INTERNATIONAL WORKSHOP ON  
LINEAR COLLIDERS**

**ICWS13**

**11-15 NOVEMBER 2013**  
**THE UNIVERSITY OF TOKYO**

**SACHIO  
Komamiya**

**ICEPP  
The University of Tokyo**

# Linear Collider Board LCB

11 November 2013 LCWS13

Sachio Komamiya

LCB has to investigate strategy for the CLIC project and to inspect the progress of its R&D. However, in this talk I will rather concentrate on the ILC project because of its urgency.



## Mission of LCB provided by ICFA

LCB will

- 1) establish **Linear Collider Directorate** headed by the LC Director
- 2) provide **oversight to the LC Directorate** (LCD)
- 3) work with **Funding Agencies for Large Colliders** (FALC)
- 4) set up **Project Advisory Committee** (PAC)
- 5) **monitor the progress** of LC activities through the LC Director and PAC Chair, and
- 6) monitor the **outreach** of LCD, regional and other groups to the scientific community, to industry, to government officials, and to the public.

The most important thing in proceeding the project is to share a **common vision**. In order to boost the project we share a common feeling **“that should do”**.

Realistic, robust and simple design has to be pursued for the accelerators.

TDR shows technical feasibility of the ILC project including its cost. EDR (Engineering Design Report) of ILC should show the detailed design based on the given site. Experts will examine if there are rooms for simpler design. Design of efficient and simple production /test lines for the components must be included.

How to tender and procure the superconducting cavities/modules, how to test and to pick out defectives, and to feedback to the producer ?

How to build efficient and simple positron sources ?

How to design realistic commissioning procedure of the beam delivery system ?

Since we have relatively sufficient time to design robust systems, except for the SCRF, realistic milestones have to be set with prioritization.

These are the subjects for the ILC division of LCC.

PAC will examine these milestones.

# Members:

5 members X 3 regions + chair = 16 members + secretary

Chair	Sachio Komamiya (The University of Tokyo)
Americas	Jonathan Bagger (Johns Hopkins University) Fermilab Director (Nigel Lockyer) David MacFarlane (SLAC) Lia Meringa (TRIUMF) Hugh Montgomery (Jefferson Lab)
Asia	Jie Gao (IHEP, Beijing) Rohini Godbole (Indian Institute of Science) Sunkee Kim (RISP) Atsuto Suzuki (KEK Director) Yifang Wang (IHEP)
Europe	The CERN Director-General (Rolf Heuer) The DESY Director of Particle Physics (Joachim Mnich) Francois Le Diberder (IN2P3) The JINR Director (Victor Matveev) Lenny Rivkin (PSI)
Secretary	Roy Rubinstein

LCB meetings will be held only twice every year, preparation of the meeting is specially important.

In particular subcommittee(s) must be established for pursuit the following two items for ILC.

**I Make a roadmap towards the international agreement (treaty)**

**II Discuss and decide the organizational form of the ILC Lab  
(Governance, Project Management etc.)**

Two documents are ready for the item II:

- a. PIP (Project Implementation Planning) is the basis for working into a final Organizational form.
- b. Select items in CPDG (Comprehensive Project Design Guidance) which are not included in PIP.

## Important matters for the final form of the LC Lab

### (a) Legal framework

The framework will evolve from that based on MoU to that on International Treaty.

(Experience of XFEL: It was not easy to reach an agreement even for a limited-liability company.)

### (b) Procurement

Although based on In-kind, significantly large Common Fund is needed

(ITER: almost all in-kind, LHC: 80% by the Host)

### (c) Staff composition

Basically seconded staffs from many labs.

It is essential to have full time core members in the Central Team employed by the Common Fund.

### (d) Organization

Director General, Directorate,  
Council, User's Committee

### (e) Role of host

Short term agility and long time stability are needed for the organization

## (2) Building Models for the International sharing of expenses and responsibilities

The experts in LCC have to design various models of package proposal.

Civil Engineering (basically host)

SCRF (basically international division)

Other components

We should not duplicate the same mistake that the ITER project have made. A simple In-kind contribution based on a value engineering is inefficient, because decision making takes time due to feedback process to each funding agencies.

Experts need to adjust package design considering the record of performance of industries and that based on equality of opportunity.

MEXT will start official contact with other regions and countries with help of LCC and Japanese scientists from KEK and universities. The Ministry of Foreign Affairs has to be involved in the international negotiations.

We eager to see a “green light” from the Japanese government, but they want to see the signs of contributions from oversea. We need continual communication in order not to fall into a “Nash equilibrium”.

### (3) Staffing of the ILC Lab

Close inspection of number of staffs (accelerator physicists and engineers) necessary for the project based on TDR

Number of necessary staffs/postdocs in each section

Host

Set up strategy to increase the number of staffs.

Temporary transfer of staffs from laboratories all over the world

Inspect current and expected number of staffs in laboratories or universities in each region/country

# PAC (Project Advisory Committee)

The PAC will assess and / or comment (for ILC and CLIC):

- The overall physics, technical design, cost, and schedule
- The detector progress
- Civil construction and the preparatory activities
- The financial contributions and management as far as accelerator/detector design, R&D and the site preparation activities
- Schedule

Members are selected.

The first PAC meeting will be held just before the LCB meeting (18-19 February 2014 at DESY).

<b>Chair</b>	<b>Norbert Holtkamp</b>	
<b>Deputy Chair</b>	<b>Michel Davier</b>	
<b>Accelerator and Project</b>		
	<b>Hans Weise (DESY)</b>	Linac Construction
	<b>Robert Orr (Tronto)</b>	Cavity R&D
	<b>Mark Palmer (FNAL)</b>	Large Science Facilities
	<b>Philippe Lebrun (CERN)</b>	PM / Cost
	<b>Osamu Kamigaito (RFBF Riken)</b>	Facility construction
	<b>Moo Hyun Cho (PAL Korea)</b>	Linac Technology
	<b>Eisuke Tada (JAEA/ITER)</b>	PM / Integration
	<b>Shinichi Akutagawa (Kobe University)</b>	Construction Management
	<b>Norihito Ohuchi (KEK) NOT AVAILABLE</b>	SC-RF/ Cryomodule product.
<b>Experiments</b>		
	<b>Joe Lykken (FNAL)</b>	Physics
	<b>Peter Jenni (CERN/ATLAS)</b>	Detector/Physics
	<b>Tomio Kobayashi (ICEPP, Tokyo)</b>	Detector/ Experiments
	<b>Hesheng Chen (IHEP, Beijing)</b>	Detector/Experiemnts

# MoU for LCC

The almost final MoU is ready

The known members to write his/her signature for the MoU

CERN DG

KEK DG

DESY

IN2P3

DoE cannot write signatures for multi-lateral MoU but they promised to contribute to the Common Fund.

In addition to the above members I am asking LCB members  
China, Korea, India, Canada, ..., who is going to write the signature.

Countries without LCB members (UK, ...) I am asking privately.

First, known members give signatures, and then extend to other members.  
(The same procedure was taken for the GDE MoU)

# Future of the Energy Frontier Physics

High Energy Physics (Elementary Particle Physics) was developed along with the advance of accelerator technology. At least in the first half of this century we need very high energy accelerators.

The development of accelerator technology was lead by high energy physics. Scientists in the other fields are rather “users” of the machines, and did not directly contribute to the accelerator technology development. **It is obvious that our field needs more experts of accelerator technologies to build “F1-machines”.**

In July last year **the Higgs Boson was discovered at LHC**. This discovery was an outstanding achievement since the November Revolution of 1974 (Discovery of the charm quark). Detailed study of the Higgs Boson lead to a breakthrough towards the new paradigm beyond the Standard Model.

We hope that LHC will directly discover new particles beyond the Standard Model. On the other hand, **energy extendability** of LC is ensured by the ability to extend the linac. For example, we can perform precise measurement of **Dark Matter particle** when we set the energy above the threshold.

Also unexpected discoveries may happen in the energy frontier. C. D. Anderson discovered muon, when he searched for the Yukawa's pions. M. Koshiba discovered neutrinos from the supernova 1987A, when he searched for nucleon decay predicted by GUTs. Columbus discovered the American Continent, when he tried to reach India due to the Toscanelli's prediction.

Even if we (experimentalists) cannot believe theorists' predictions or cannot digest their theories, we should pretend to trust theorists and search for the new particles or new phenomena that they predict. Then "serendipity" might work.

If ILC were not planned, the energy frontier machine would be LHC alone in the next 20-30 years. If the society did not have a positive vision on science, we could forget about the future.

However, triggered by the discovery of the Higgs Boson, now we have the fact that the particle physics has a bright future towards the paradigm beyond the Standard Model.

We need to enhance awareness for community's future for 20-30 years. Linear Colliders are essential tools for our society. We will share the common vision.