

HEP Community in Japan

- How it is organized,
- How decision-making/coordination of its program is done,
- How its funding is done, and
- How it communicates with J-Gov and Society

Hiroaki Aihara
The University of Tokyo

Presented at 87th Plenary ECFA Meeting, July 1st, 2010, Frascati

Japan Association of High Energy Physicists

- Grassroots organization of Japanese high energy physicists since 1968
- Self-organized, self-supported
- Currently, a total membership of ~830, 685 researchers + 145 Ph.D. thesis students
- High Energy Physics Committee
 - 10 experimentalists elected
 - 1 theorist, appointed by experimentalists
 - 2-year term & up to 2 consecutive terms
 - ex officio members (KEK DG, IPNS director, Accelerator director)
 - Chairperson is elected by mutual vote from among the 10 experimentalists.
 - Note: A similar organization exists for theorists.

Current membership of JAHEP committee

2009.9~2011.8

Chairperson	AIHARA, Hiroaki	The University of Tokyo
Secretary	TOKUSHUKU, Katsuo	KEK (IPNS)
Secretary	ICHIKAWA, Atsuko	Kyoto University
	USHIRODA, Yutaka	KEK (IPNS)
	KUZE, Masahiro	Tokyo Institute of Technology
	SAKAI, Yoshihide	KEK (IPNS)
	HANAGAKI, Kazunori	Osaka University
	YAMASHITA, Satoru	The University of Tokyo (ICEPP)
	YAMAMOTO, Hitoshi	Tohoku University
	YOKOYA, Kaoru	KEK Accelerator Lab
Theory member	OKADA, Yasuhiro	KEK (IPNS)
Ex officio	SUZUKI, Atsuto	KEK Director General
	NISHIKAWA, Koichiro	KEK IPNS Director
	OIDE, Katsunobu	KEK Accelerator Lab Director

Mission of JAHEP committee

- Monitor the status/progress of J-HEP in general
- **Bottom-up** planning of the future projects
- Build community-wide consensus
- Advise/request to KEK (which is **Inter-University Research Institute Corporation**)
- Reports (examples)
 - 2006 Prospects for Elementary Particle Physics
 - 2004 Statement by the Japan High Energy Physics Committee on the International Linear Collider
 - 1997 The Final Report of the Subcommittee on Future Projects of High Energy Physics in Japan
- KEK makes Roadmap based on JAHEP recommendation

Quest for Birth-Evolution of Universe

International Linear Collider (ILC)

Quest for Unifying Matter and Force

Current Roadmap of KEK

Lepton CP Asymmetry

Power-Upgrade

J-PARC

Scientific Activities
Technology Innovation
Encouraging Human Resources

Beyond Standard Physics

Super-KEKB

KEK-B

Quark CP Asymmetry

LHC

Lepton

[Origin of Matter]

Quark

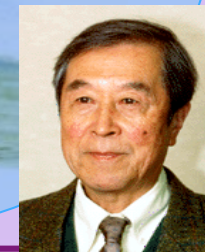
Quest for Neutrinos

n_t
 n_m
 n_e

Quest for 6 Quarks

[Origin of Force]

Higgs Particle [Origin of Mass]



KEK DG, of course,
directly reports to MEXT.

Science Council of Japan

- SCJ was established in January 1949 as a “special organization” under the jurisdiction of the **Prime Minister** for the purpose of promoting and enhancing the field of science, and having science reflected in and permeated into administration, industries and people’s lives. Following are its two functions:
 - To deliberate on important issues concerning science and help solve such issues.
 - To make coordination among scientific studies to achieve higher efficiency.
- SCJ consists of 210 members and some 2,000 associate members.
- 6-year term (renewable for associate members)
- SCJ comprises a General Assembly, an Executive Board, three Section Meetings (Humanities and Social Sciences, Life Sciences, and Physical Sciences and Engineering), **30 committees based on fields of specialties**, five Administrative Committees for operation, and issue-oriented ad hoc committees.

General Assembly of SCJ



Japan Perspective : Proposal from Academia 2010

SCJ Physics Committee

- 31 members from all physical sciences
 - Chair, Deputy Chair, 2 secretaries (HA is one of two.)
- 3 subcommittees
 - Particle and Nuclear physics (21 members. HA is chair.)
 - Astronomy and Space physics (15 members)
 - Material and General physics (26members)
- Advice to MEXT independently of specific community's interest.
- SCJ members are **NOT** representatives of communities he/she belong to.
 - Judgment based on broader vision on interdisciplinary issues/ conflicts

SCJ Master Plan of the major/large-scale research programs (March 2010)

- Master plan covers all fields from human and social science to biotechnology, energy and earth science, physics and engineering.
- From a total of 285 big-science proposed projects with more than ~\$100M construction budget and big research programs with more than ~\$10M operational budget, SCJ chose 43 of them as Japan's priority. HEP projects included are:
 - KEKB upgrade ($\text{lumx40} = 8 \times 10^{35}$) \$350M
 - J-PARC upgrade (0.75 to 1.7 MW) \$380M
 - ILC (regardless of its site)
 - Large Nucleon Decay/Neutrino Detectors (eg. Hyper Kamiokande, Lq.Ar) \$500-750M

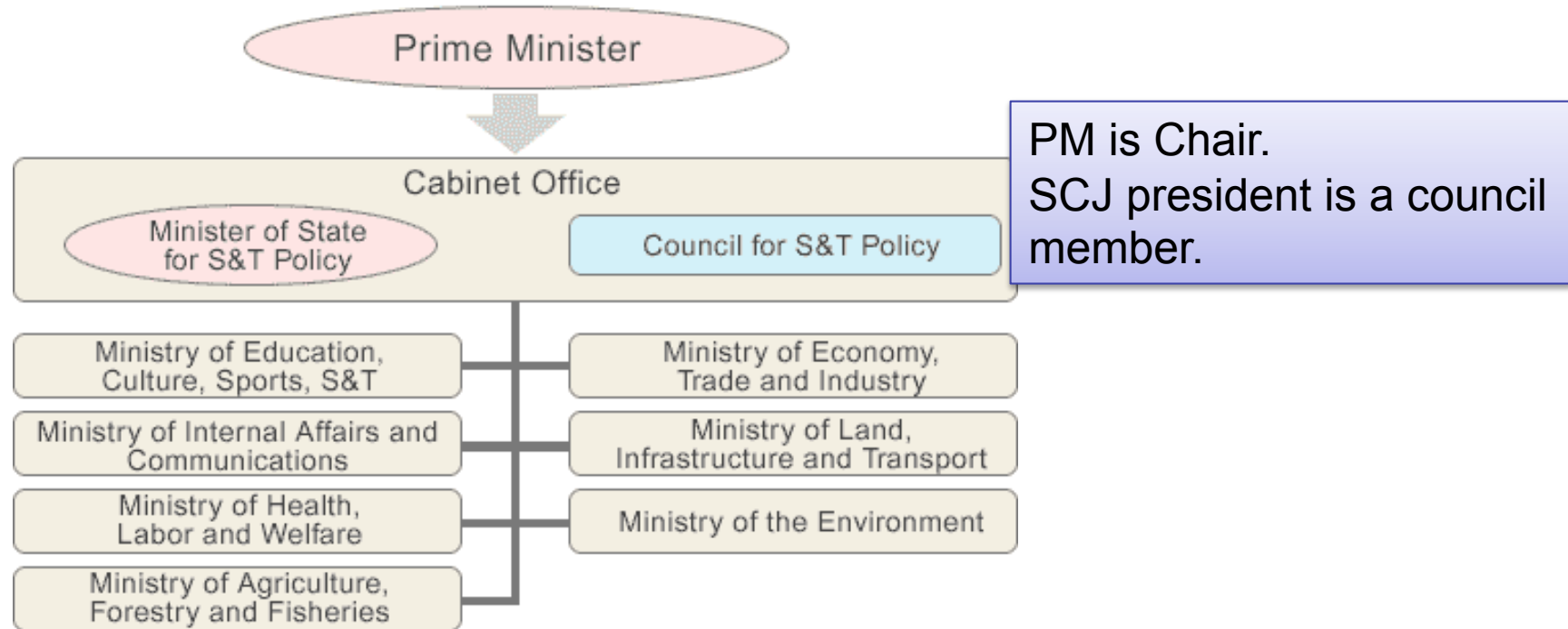
Large Facility Large Scale Research Project Master Plan

category note 1	project name	financial requirement (1billion yen)	project duration	project summary	expected outcome	international collaboration level note 2	degree of development
A	Exploring Physics beyond Today's Particle Theory with Super B-Factor	Construction: 35 Operation: 7/year	Construction 2010 to 2013 Operation 2013 to 2020	To upgrade KEK B-Factor accelerator by increasing the luminosity by a factor of 40. The project aims to investigate the mystery of matter-anti-matter asymmetry in the Universe and to unveil the fundamental laws of nature by reproducing, in the laboratory, the state of the very early, hot and dense universe.	It will provide clear understanding of the reason why the anti-matter universe does not exist and reveal the nature and origin of dark matter. It will help discover the yet-unknown laws of nature that govern the evolution of the universe.	B More than 30 foreign institutions from US, Europe, Asia and Australia are involved in the project.	A top priority item of the high energy physics community. A part of the project has already been funded.
A	Revealing the Origin of Matter with Upgraded J-PARC	Construction: 38 Operation: 2.5/year	Construction 2010-2014 Operation 2015-2019	Increasing the intensity of the main ring proton accelerator and corresponding upgrade of the neutrino beamline. Expanding the experimental hall to accommodate a variety of particle/nuclear experiments.	Investigate the evolution as well as origin of matter in the Universe.	B More than 62 institutions from 12 foreign countries are involved.	The upgrade of the main ring is a top priority of particle physics community and the expansion of the hadron experimental hall is a top priority of nuclear physics community.
A	World Research Center for the International Linear Collider	Construction 670 Operation 20/year	Construction 2015-2024 Operation 2025-2034	A proposed electron-positron collider, the international Linear Collider (ILC) will answer the questions about what the universe is made of and what is the dynamics that the vacuum follows. Planning, designing, funding and building will require global, multi-national collaboration.	It will explain the origin of mass and probe the theories beyond today's particle theory, such as super symmetric theory and the theory of extra dimensions. It will also enable us to discover new particles and new phenomena.	A Global organization, including US, European and Asian countries, is being envisioned.	The particle physics community considers ILC as a top priority project on the energy frontier after Large Hadron Collider.
A	Nucleon Decay and Neutrino Oscillation Experiments with Large Advanced Detectors	Construction 50-75 Operation 20/year	Construction 2014-2020 Operation 2021-2035	Advance neutrino physics/astronomy and search for nucleon decays using a large water Cherenkov detector that is approximately 20 times larger in volume than Super Kamiokande and/or large liquid argon detector.	It would discover the particle-antiparticle asymmetry (CP asymmetry) in a lepton sector by shooting a muon neutrino beam from J-PARC to the advanced large neutrino detector. It will also probe the grand unified theories by searching for nucleon decays.	B This project builds up on the legacy of Super Kamiokande with a large number of international institutions.	A high priority will be considered by both particle and cosmic ray physics communities if the on-going long baseline neutrino (J-PARC to Kamioka T2K) experiment would obtain the results as expected.

*note 1 A: large facility project, B: large scale research project

*note 2 International Collaboration Level: a) jointly led collaboration, i) domestically led collaboration, u) foreign led collaboration, e) research level international collaboration/cooperation, o) other

Council of Science and Technology Policy (CSTP)



Strategic promotion and timeliness

The council drafts comprehensive strategy of S&T to respond to national and social issues in a timely and appropriate manner.

Comprehensiveness

In S&T policy making, the council takes social sciences and humanities into consideration to improve the relationship between science and **society** in areas such as ethics.

Discretion

The council may express opinions to the Prime Minister or other Ministers on important issues of S&T at its discretion.

Conclusions

- Bottom up
 - Consensus in Japan Association of HEP
 - KEK's leadership
 - Endorsement of Science Council of Japan
 - HEP funding is based on this bottom-up process leading to its primary funding agency MEXT.
- Top down
 - Council of Science and Technology Policy
 - So far not very successful.
- Personal notes
 - After last year's political change (new ruling Party), more emphasis on political initiative and top-down approach.
 - Possible loss of stability
 - Emphasis on Science for Society (application oriented science: green/life innovation)
 - Huge national budget deficit ~ 553trillion yen~\$5530billion

END