Discussing the 2020 Update of the European Strategy for Particle Physics (ESPP)

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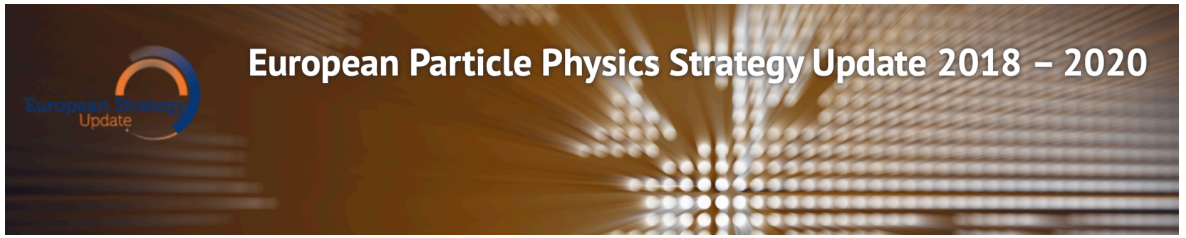

Joint particle physics seminar

Plan

1. Brief introduction, the process+rep..
2. Halina Abramowicz - perspective on the output
3. Eliezer Rabinovici - perspective on the process & lessons for the future
4. Halina & Eliezer - addressing questions sent in advance
5. Open discussion

Highlighting some of the report

The European Strategy Group:

The European Strategy Group (ESG) is a special body set up by the CERN Council, with the remit to establish a proposal for the periodic update of the medium-and long-term European Strategy for Particle Physics, which it submits to the CERN Council for approval. The ESG is assisted in this task by a Physics Preparatory Group (PPG) and drafts its update proposal taking into account, inter alia, the scientific input submitted by the PPG. The ESG is composed of all the stakeholders of the European Strategy for Particle Physics.

In 2020, the composition of the ESG was as described below

MEMBERS
CERN Member States representatives
Professor Jochen Schieck (Austria)
Professor Dirk Ryckbosch (Belgium)
Professor Leander Litov (Bulgaria)
Professor Tomas Davidek (Czech Republic)
Professor Jens-Jørgen Gaardhøje (Denmark)
Professor Paula Eerola (Finland)
Dr Reynald Pain (France)
Professor Siegfried Bethke (Germany)
Professor Costas Fountas (Greece)
Professor Peter Levai (Hungary)
Professor Eliezer Rabinovici (Israel)
Professor Fernando Ferroni (Italy)
Professor Eric Laenen (Netherlands)
Professor Gerald Eigen (Norway)
Professor Jan Królikowski (Poland)
Professor Mario Pimenta (Portugal)
Dr Calin Alexa (Romania)
Professor Peter Adzic (Serbia)
Professor Stanislav Tokar (Slovakia)
Professor Maria José Garcia Borge (Spain)
Professor Kerstin Jon-And (Sweden)
Professor Tatsuya Nakada (Switzerland)
Professor Jonathan Butterworth (United Kingdom)

CERN Director-General
Dr Fabiola Gianotti

Major European National Laboratories
Professor Nicanor Colino (CIEMAT)
Professor Joachim Mnich (DESY)
Professor Anne-Isabelle Etienvre (IRFU)
Professor Achille Stocchi (LAL)
Professor Sijbrand de Jong (NIKHEF)
Dr Pierluigi Campana (LNF)
Professor Stefano Ragazzi (LNGS)
Professor Klaus Kirch (PSI)
Professor Mark Thomson (STFC-RAL)

Strategy Secretariat Members
Professor Halina Abramowicz (Scientific Secretary, ESG Chair)
Professor Keith Ellis (SPC Chair)
Professor Jorgen D'Hondt (ECFA Chair)
Professor Leonid Rivkin (Chair EU Lab. Directors' Mtg)

ESG INVITEES
President of the CERN Council
Dr Ursula Bassler

Associate Member States in the pre-stage to Membership
Professor Panos Razis (Cyprus)
Professor Boštjan Golob (Slovenia)

Associate Member States
Dr Aurelijus Rinkevicius (Lithuania)
Dr Alper Yüksel (Turkey)
Professor Borys Grynyov (Ukraine)

States with special Observer status (LHC)
Professor Yasuhiro Okada (Japan)
Professor Vladimir Kekelidze (Russian Federation)
Dr Abid Patwa (United States of America)

Organisations with Observer status
Mr Adam Tyson (European Commission)
Professor Boris Sharkov (JINR)

Phys. Prep. Group:

Strategy secretariat
Professor Halina Abramowicz (Israel) Scientific Secretary, Chair
Professor Keith Ellis (United Kingdom) SPC Chair
Professor Jorgen D'Hondt (Belgium) ECFA Chair
Professor Lenny Rivkin (Switzerland) Chair EU Lab. Directors' Mtg

Scientific Policy Committee (SPC)
Professor Caterina Biscari (Spain)
Professor Belen Gavela (Spain)
Professor Beate Heinemann (Germany)
Professor Krzysztof Redlich (Poland)

European Committee for Future Accelerators (ECFA)
Professor Stan Bentvelsen (Netherlands)
Professor Paris Sphicas (Greece)
Dr Marco Zito (France)
Professor Antonio Zoccoli (Italy)

CERN
Dr Gian Giudice

ASIA/AMERICAS
Professor Shoji Asai (Japan)
Professor Marcela Carena (United States of America)
Professor Xinchou Lou (China)
Professor Brigitte Vachon (Canada)

Working Group 1: Social and career aspects for the next generation
Chair: Professor Eric Laenen (Netherlands)

Working Group 2: Issues related to Global Projects hosted by CERN or funded through CERN outside Europe
Chair: Professor Mark Thomson (United Kingdom)

Working Group 3: Relations with other groups and organisations
Chair: Professor Tatsuya Nakada (Switzerland)

Working Group 4: Knowledge and Technology Transfer
Chair: Professor Leander Litov (Bulgaria)

Working Group 5: Public engagement, Education and Communication
Chair: Professor Sijbrand de Jong (Netherlands)

Working Group 6: Sustainability and Environmental impact
Chair: Professor Dirk Ryckbosch (Belgium)

The report

https://europeanstrategyupdate.web.cern.ch/welcome; IL Town-hall meeting: https://indico.cern.ch/event/778319/

Structure (8 sections, 6 pages):

Intro; Major developments from 2013; General considerations;

High-priority initiatives; Other essential activities; Synergies \w fields …

Brief from the High-priority future initiatives, bullet A.

* An electron-positron (e-p) Higgs factory is the highest-priority next collider.

* For longer term, an ambition for a proton-proton collider at highest energy.

Europe, together \w Int. partners, should investigate the feasibility of a future hadron collider at CERN \w a COM of at least 100 TeV & \w (e-p) Higgs & EW factory as a possible first stage.

The timely realisation of e-p ILC in Japan would be compatible with this strategy and, in that case, the European particle physics community would wish to collaborate.

Brief from the High-priority future initiatives, bullet B.

*"Pushing" accelerator Tech.: high-field magnets, high-T superconductors, plasma wakefield & other high-gradient structures, bright muon beams, E-recovery LINAC.

The community must intensify accelerator R&D and sustain it with adequate resources. A roadmap should prioritise the technology, taking into account synergies with Int. partners and other communities such as photon and neutron sources, fusion energy and industry.

Other essential scientific activities (my take-homes …)

A. Diverse program towards: Dark matter; Flavor phys; electric or magnetic dipole moments; axions; dark sectors; FIPS via accelerator and non-accelerator experiments.

B. Theoretical Phys. is essential driver. Europe should continue to vigorously support a broad programme of Th. research covering from abstract to pheno' topics.

C. Particle physics exps. relies on innovative instrumentation & infrastructures. To prepare for future programmes, maintain focus on instrumentation+roadmap+Tech. transfer.

Submitted questions

1. Is it correct that circular-collider has been effectively favoured ?

2. What is the status of the physics beyond collider (PBC) initiative?
   (NA62 in dump-mode, KLEVER, SHiP, etc.)

3. What about the HE-LHC?

4. What are the contributions that CERN would be ready to make for the ILC in Japan?

5. Is there a clear time scale for the “high-priority” projects?