European Particle Physics Strategy

https://europeanstrategygroup.web.cern.ch/EuropeanStrategyGroup/

Annual Plenary CHIPP Meeting

13-14 September 2012, Kartause Ittingen

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European Strategy for Particle Physics

- Current strategy was adapted by the Council in July 2006
- It consists of 17 strategy statements:
  - two General issues; necessity of strategy
  - eight Scientific activities (LHC, Accelerator R&D, ILC, Neutrino, Astroparticle, Flavour, Nucelar physics, Theory)
  - four Organizational issues
    - CERN Council's role in coordinating European particle physics
    - Globalization
    - Non-member state relation
    - Relation with EU
  - three Complementary issues
    - Outreach
    - Technology Transfer Network
    - Relation with industry

Timeframe

- Written input from the worldwide communities,
- Open Symposium
  - 10-12 September 2012, Cracow for scientific discussion
- Briefing Book in December for the Strategy Group:
  - Summary of physics status by the Preparatory Group
- Strategy Group meeting to draft the updated strategy
  - January 2013, Erice one week long meeting to draft the new strategy
- Council meeting in March
  - Finalisation of the draft Strategy by the Council
- Formal adoption at Special Council in May with participation of some ministers from the member countries

Open Symposium in Cracow

- Open Symposium, Cracow 10-12, September 2012 http://espp2012.ifj.edu.pl/
- Quite successful, over 450 people participating
- Presentations on
  - High energy frontier experiments
  - Flavour and symmetries
  - Strong interactions
  - Astroparticle experiments
  - Neutrinos
  - Theory
  - Accelerator Science
  - Instrumentations, infrastructure, and computing
  - Regional status (Americas and Asia)

A Quick Summary (I)

- Generally accepted (I hope):
  - Complementarity between Energy Frontier Experiments and Precision Measurements in search for physics beyond the Standard Model (i.e. direct- versus indirect-search).
  - For some cases, QCD effect introduces a sever limitation.
  - Complex hadronic system can generate new properties (e.g. QGP)
  - Neutrino physics possibly probing "very" high energy scale
- Exploitation of LHC covers almost every aspects
  → Energy Frontier, Precision, QCD and QGP
- For the next High Energy Frontier machine for New Physics search in Europe, we need to agree soon on a process to compare different options so that a community choice could be made at an appropriate moment (next Strategy Update?) with results from LHC13-14 data.

A Quick Summary (II)

- Small scale experiments should still be possible for some precision measurements. But, may be not for long…..
- e^+e^- colliders can now make a concrete physics programme on precision physics with "Higgs"-like particle and top (and some more)
- Concrete physics cases for both long and short baseline neutrino programme can be made. In principle, many of the technology seems to exist for those (i.e. more D than R needed). Long baseline facilities might be a concrete example of coordination between PP and APP.
- Projects to deepen our knowledge in Standard Model are being proposed

To Conclude

- If we can do everything in everyplace at anytime, we do not need strategy.
- We can do (almost) everything only if we exploit fully the four dimensional space-time → strategy
- Scientific case is a crucial input for setting up the strategy, however…
  - Obviously there is not enough resources.
  - Many non-scientific (political, social, economical, etc.) factors.
  - But also importance for different scientific cases are neither uniquely nor objectively defined: different scientific tastes.
- As nature shows, difference is also strength: but we need compromises, concessions, patience, and determination to reach a strategy!