



# The European Strategy

<https://europeanstrategygroup.web.cern.ch/EuropeanStrategyGroup/>  
ECFA-EPS Joint Session of EPS HEP Conference  
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Chair of Strategy Group and Preparatory Group



# New European Strategy is here

- **The first European Strategy** for Particle Physics adopted by the CERN Council in **June 2006** in Lisbon
- **The first update** has officially **started in September 2011** by the Council establishing the Preparatory Group (science input) and Strategy Group (strategy drafting)
- **Open Symposium** organised by the Preparatory Group in **September 2012** in Krakow
- **The draft proposal** by the European Strategy Group as outcome of the meeting in **January 2013** in Erice
- **First Council discussion** in **March 2013**, finalising the agreed draft for the formal approval later
- **Formal adoption** by the CERN Council in its special Strategy Session in Brussels **in May 2013**

# Reminder: framework of the update

- Strategy and Preparatory Group under the CERN Council
  - Preparatory Group
    - Members from SPC, ECFA, CERN, Americas, Asia + Scientific Secretariat (15)
      - Producing scientific summary in a form of Briefing Book based on the community, funding agencies and policy makers inputs given at **Open Symposium** and written contributions

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  - Strategy Group
    - Member state delegates, DG, directors of large national laboratories, associate and observer states delegates, representative from other organisations (JINR, ApPEC, NUPEC, EU, ESFRI, FALC) (44) + PPG + Scientific Secretariat
      - **Draft the updated strategy** based on the scientific input from the Preparatory Group and non scientific input from its own working groups.
      - Producing deliberation paper providing scientific rational for the strategy statements and discussion on possible governance and organization for strategy implementation

Both groups steered by Scientific Secretariat for the Strategy Session of the Council (4), chaired by Scientific Secretary

# Two Major Meetings

## Cracow Open Symposium and Erice Drafting Session

CERN Council Strategy Group

**OPEN SYMPOSIUM ON EUROPEAN STRATEGY FOR PARTICLE PHYSICS**

September 10<sup>th</sup> - 12<sup>th</sup>, 2012 Kraków, Poland

Organized under the aegis of the European Strategy Preparatory Group by:

AGH University of Science and Technology  
Institute of Nuclear Physics Polish Academy of Sciences  
The M. Smoluchowski Scientific Consortium "Matter-Energy-Future"

European Strategy Preparatory Group Scientific Committee

Roy Aleksan  
Peter Braun-Munzinger  
Catherine De Clercq  
Philippe Chomaz  
Klaus Desch  
Marcella Diemoz  
Katri Huitu  
Peter Jenni  
Manfred Kowalewski  
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Toshiaki Inoue  
Tatsuya Nakada (chair)  
Emmanuel Tsensmelis  
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Khalid Wirne  
Aleksander Filip Ziemski

Local Advisory Committee

Marek Jezabek (chair)  
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Piotr Malecki  
Barbara Wosiek  
Agnieszka Zalewska

Local Organizing Committee

Bogdan Muryn  
Zbigniew Natkaniec  
Agnieszka Oblakowska-Mucha  
Maciej Skrzypiek (chair)  
Tomasz Szmalak  
Maciej Wittek

<http://espp2012.in.edu.pl>

2.5 Days  
Community Meeting  
with lively discussions



# Brussels Event May 2013

- **Formal adoption by the CERN Council** in its special European Strategy Session in Brussels, on 30<sup>th</sup> of May 2013 in the morning in Brussels (European Commission, Berlaymont Building, Schuman Room)
- **There are several accompanied events**
  - Press conference (President, DG, SC), morning of 29<sup>th</sup>
  - Visit to the European Parliament (talk by President & DG), over the lunch time of 29<sup>th</sup>
  - Round Table Discussion (President), late in the afternoon of 29<sup>th</sup>
  - Visit to EU Competitive Council meeting (talk by DG), over the lunch time of 30<sup>th</sup>
  - Exhibition on Outreach items (Communication Network), 29<sup>th</sup> and 30<sup>th</sup> in the Berlaymont Building.



# Documents related to the Strategy

- **Physics Briefing Book** by the Preparatory Group as physics input for the Strategy Group, December 2012.  
Based on the community input at the Open Symposium and by the written submissions
- **European Strategy Paper** adopted by the CERN Council on 30<sup>th</sup> of May 2013 in its special Strategy Session in Brussels
- **Deliberation Paper** by the European Strategy Group for information, May 2013. Rational behind the Strategy and suggestion for the organisational changes in the follow-up and monitoring to the Council
- **Brochure** for social relevance of particle physics by the Communication Group in the occasion of the Strategy update

All available under

<http://council.web.cern.ch/council/en/EuropeanStrategy/ESParticlePhysics.html>

<http://council.web.cern.ch/council/en/EuropeanStrategy/ESArchive.html>

# Strategy Paper

- Preamble and 17 statements
  - **Two for general issues:**  
success of European model, importance of global vision
  - **Four for selected high priority large scale projects:**  
LHC, HE frontier machine R&D,  $e^+e^-$  (ILC), long baseline  $\nu$
  - **Five for equally important scientific issues:**  
theory, precision physics, detector R&D, computing and infrastructure, astroparticle physics, nuclear physics
  - **Two for organisational issues:**  
EU relation, European participation in global projects
  - **Three for issues on social relevance:**  
communication, outreach, training and education, knowledge transfer
  - **One for recommendation for the future strategy activities:**  
needs to reflect on the organisational issues



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- Unique opportunities at the national laboratories (worldwide) are fully acknowledged and encouraged for the precision experiments, i.e. guaranteeing the diversity, and as basis for detector R&D and construction
- Awareness of importance on social relevant issues: outreach, education, training, communication and knowledge transfer

# Four large scale projects with high priority

- c) The discovery of the Higgs boson is the start of a major programme of work to measure this particle's properties with the highest possible precision for testing the validity of the Standard Model and to search for further new physics at the energy frontier. The LHC is in a unique position to pursue this programme. *Europe's top priority should be the exploitation of the full potential of the LHC, including the high-luminosity upgrade of the machine and detectors with a view to collecting ten times more data than in the initial design, by around 2030. This upgrade programme will also provide further exciting opportunities for the study of flavour physics and the quark-gluon plasma.*

Realisation requires major resources in Europe till the middle of 2020's for the construction, and still significant amount even beyond 2030 for M&O and data analysis, including computing. Needs of foreign contributions.

# Four large scale projects with high priority

- d) To stay at the forefront of particle physics, Europe needs to be in a position to propose an ambitious post-LHC accelerator project at CERN by the time of the next Strategy update, when physics results from the LHC running at 14 TeV will be available. ***CERN should undertake design studies for accelerator projects in a global context, with emphasis on proton-proton and electron-positron high-energy frontier machines. These design studies should be coupled to a vigorous accelerator R&D programme, including high-field magnets and high-gradient accelerating structures, in collaboration with national institutes, laboratories and universities worldwide.***

- European ambition is energy frontier physics.
- The main motivation of the next ambitious machine is physics beyond Higgs.
- Coherence with outside of Europe i.e. “global context” important

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- e) There is a strong scientific case for an electron-positron collider, complementary to the LHC, that can study the properties of the Higgs boson and other particles with unprecedented precision and whose energy can be upgraded. The Technical Design Report of the International Linear Collider (ILC) has been completed, with large European participation. The initiative from the Japanese particle physics community to host the ILC in Japan is most welcome, and European groups are eager to participate. *Europe looks forward to a proposal from Japan to discuss a possible participation.*

- Complementarity between  $e^+e^-$  machines and the LHC for Higgs studies and search for new particles.
- Europe is not in the position to construct another large accelerator right now.
- If the ILC were realised within the LHC lifetime outside of Europe, a logical conclusion is to contribute, i.e. optimisation of the global resources.

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- f) Rapid progress in neutrino oscillation physics, with significant European involvement, has established a strong scientific case for a long-baseline neutrino programme exploring CP violation and the mass hierarchy in the neutrino sector. *CERN should develop a neutrino programme to pave the way for a substantial European role in future long-baseline experiments. Europe should explore the possibility of major participation in leading long-baseline neutrino projects in the US and Japan.*

- Full cost for a comprehensive accelerator based neutrino facility is large. Ideas for such facilities are being developed in Japan, the US and Europe.
- Consideration should include the physics potential from non-accelerator neutrino programme: i.e. sterile neutrino and mass hierarchy.
- Optimising the European contribution for neutrino physics vis a vis the European ambition of high energy frontier.



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  - **$e^+e^-$  programme and ILC**: If ILC became real, find a way of participating without damaging the European highest priority programme: creative ideas for finding funding sources
  - **Neutrinos**: Facilitate a bases at CERN for the needs by the long baseline experiment detector R&D and support strong European participation in the experiment at the US or Japan

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- **Other essential issues** need also some resources:
  - Theory
  - Precision experiments
  - Detector R&D and infrastructure. Computing infrastructure.
  - Non-accelerator particle and nuclear physics

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- Europe should be ready for **global projects inside and outside of Europe**: CERN as natural focal point
- **Social Relevance** taken as **an integral part of our activities**:
  - Communication
  - Outreach and training
  - Knowledge transfer and relation with industry

**Well established national activities exist**, i.e. networking is the issue. IPOG needs steady funding



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  - Enhancing **activities and networking in the social relevant issues** as outlined in the Strategy
  - Taking up the **proposed organisational adjustments** for the Strategy matter by the ESG working groups
- Looking forward to the plan of the other regions, and stay tuned with **development of the field**.