

# UK HEP Forum

## Cosmology, Gravitation and Particle Physics

The Cosener's House, Abingdon  
28-29 November 2017

### Registration

<http://hepwww.rl.ac.uk/accel/forum/2017/registration.html>

### Organising Committee

Gill Birch, Phil Burrows, David G. Cerdeño, John Ellis, Valery Khoze, Alex Lenz,  
Stewart Martin-Haugh, Stefania Ricciardi, Tricia Shand, Monika Wielers

Abingdon, JMW Turner, 1806 CC-BY-NC-ND 3.0 (Unported) Photo © Tate <http://www.tate.org.uk/art/artworks/turner-abingdon-n00485>

Keith Ellis,  
IPPP, Durham



---

# European Strategy Update

---

- ❖ Next update of the European Strategy for Particle Physics.
- ❖ Aim to have update of Strategy for May 2020.
  - ❖ 7 years since the last update, 2013.
  - ❖ End of Run 2 of LHC (12/2018)
  - ❖ FCC conceptual design report completed
  - ❖ CLIC update
    - ❖ Report of Physics beyond Colliders Study Group by end of 2018
    - ❖ Japanese decision on ILC should be known by end of 2018.
  - ❖ .....



---

# Current European Strategy(2013)

---

- a) Europe should preserve this model (i.e. CERN) in order to keep its leading role, sustaining the success of particle physics and the benefits it brings to the wider society.
- b) The European Strategy takes into account the **worldwide particle physics landscape** and developments in related fields and should continue to do so.
- c) 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.
- d) 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.
- e) Europe looks forward to a **proposal from Japan** to discuss a possible participation, (in ILC)



f) 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.

h) Europe should support a diverse, vibrant **theoretical physics programme**, ranging from abstract to applied topics, in close collaboration with experiments and extending to neighbouring fields such as astroparticle physics and cosmology. Such support should extend also to high-performance computing and software development.

i) **Detector R&D programmes** should be supported strongly at CERN, national institutes, laboratories and universities. Infrastructure and engineering capabilities for the R&D programme and construction of large detectors, as well as infrastructures for data analysis, data preservation and distributed data-intensive computing should be maintained and further developed.

j) A range of important non-accelerator experiments take place at **the overlap of particle and astroparticle physics**, such as searches for proton decay, neutrinoless double beta decay and dark matter, and the study of high-energy cosmic-rays. These experiments address fundamental questions beyond the Standard Model of particle physics. The exchange of information between CERN and **ApPEC (Astroparticle Physics European Consortium)** has progressed since 2006. In the coming years, CERN should seek a closer collaboration with ApPEC on detector R&D with a view to maintaining the community's capability for unique projects in this field.

k) A variety of research lines at the **boundary between particle and nuclear physics** require dedicated experiments. The CERN Laboratory should maintain its capability to perform unique experiments. CERN should continue to work with NuPECC on topics of mutual interest.



---

# Last strategy process led to initiation of CERN/European activity in neutrino physics

---



Prototype cryostats  
for liquid Argon  
detectors at CERN



---

# Countdown to 2020

---

- ❖ The updated strategy will be presented in May 2020, and formulated in Jan 2020.
- ❖ Various entities, Strategy Secretariat (4), Physics Preparatory Group(15), European Strategy Group(40).
- ❖ 2019 is a year for discussion and a Europe-wide open meeting
  - ❖ Precise format will be decided in 2018.
  - ❖ At least one town meeting
  - ❖ Possibility to submit documentation, to be collated into a briefing book for the Strategy Update Group.
  - ❖ Information gathered by the Preparatory group.
- ❖ 2018 is a year for preparation of the cases for all the diverse proposals.



---

# 2018

---

- ❖ 2018 is a year of preparation, and for generation of ideas.
- ❖ “Letting a hundred flowers blossom and a hundred schools of thought contend is the policy for promoting progress in the arts and the sciences” ...
- ❖ We hope to have meeting(s) in the UK to formulate a UK position.
- ❖ IPPP has set aside a small amount of money to help with this activity.



From: Shepherd-Themistocleous, Claire (STFC,RAL,PPD)  
Sent: 11 October 2017 17:22  
To: [UK-HEP-HEADS@JISCMail.AC.UK](mailto:UK-HEP-HEADS@JISCMail.AC.UK)  
Cc: [keith.ellis@durham.ac.uk](mailto:keith.ellis@durham.ac.uk); [dave.charlton@cern.ch](mailto:dave.charlton@cern.ch)  
Subject: The European Strategy update process and UK input

Dear Colleagues,

An update of the European Strategy will get underway in 2019, with the presentation of the final document scheduled for the Spring of 2020. The CERN Council who are initiators of this process, have appointed Prof. Halina Abramowicz to lead the Strategy update. The details of the 2019 process will be fixed in June 2018.

If the programme follows the same pattern as last time, there will be a town meeting, presumably in Autumn 2019. Calendar 2018 is thus a year of preparation and for a detailed elaboration/examination of possible projects. It will be desirable to formulate UK input into this process. With this in mind we have the intention to try and stimulate one or more meetings to help formulate the UK position. We have set as a target a first meeting to be held in April 2018. The PPAP will be fully involved in this process, and the IPPP is in a position to give some support for a meeting.

Given the time scale of particle physics projects it is important to involve individuals at early stages of their careers, whose future will be impacted upon by the decisions made. We are therefore writing to you to ask you to nominate such individuals from your groups, who would be interested to drive this workshop process. If we get a large number of responses we will get back in touch with you, to discuss a selection process. We look forward to receiving your response before 28/10/2017.

Please do not hesitate to get in touch if we can provide more information.

Best regards,

Keith Ellis (Durham,IPPP)  
Claire Shepherd Themistocleous (RAL,PPAP)  
Dave Charlton (Birmingham)

- ❖ We have identified a list of about 30 names, and we hope to announce soon the date of a first workshop.
- ❖ I encourage you to participate.
- ❖ 2019 / 2020 will be years for achieving consensus.