

European Strategy for Particle Physics: Implementation in Switzerland

SERI, 13 June 2013

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Strategy Update: a.

- Europe should preserve the CERN model in order to keep its leading role in particle physics.
- **Action Items:**
 - **The SERI is asked to continue to support the CERN in financial, organisational, and political matters; consider further special contributions.**

Strategy Update: b.

- The European Strategy takes into account the worldwide particle physics landscape and developments and should continue to do so.
- **Action Items:**
 - **The CHIPP community is incited to continue its present way of functioning, relating heavily on international collaboration and cooperation.**

Strategy Update: c.

- Europe's top priority is the exploitation of the full potential of the LHC including the high-luminosity upgrade of the machine and the detectors

Action Items:

- The CHIPP community shall continue to have the LHC activities among its top priorities, as laid down in the CHIPP Roadmap.
- The SERI and the funding agencies are asked to acknowledge the increased need for funding for the upgrade period 2014-2024, possibly reaching 50% of the initial development costs for the detectors (a special credit line in the next federal message? A massive increase of the FLARE funding? A special funding line for Cantonal universities and for the ETHs?)
- The SNSF should consider to provide additional resources for the continued analysis of the LHC data, compensating for the not continued SUK/CRUS support (C15).

Strategy Update: d.

- CERN shall undertake design studies for accelerator projects in a global context (pp and e^+e^- machines) coupled to a vigorous accelerator R&D programme in collaboration with national institutes.

Action Items:

- The CHIPP community shall increase the Swiss activities in accelerator science and work to install a second chair for accelerator science at a Swiss university, which would allow the setting-up of a 'Studiengang' in this field.
- The SNSF shall support this investment by funding these activities according to its priority.
- The PSI should make more visible the existing and to be increased collaboration with CERN on accelerator R&D.

Strategy Update: e.

- Europe shall be open for a Japanese proposal to host a linear electron-positron collider, complementary to the LHC.

Action Item:

→ The SERI is asked to act along these lines in the CERN Council and in the international contacts at all levels.

Strategy Update: 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.

Action Item:

- **The CHIPP community intends to focus its astroparticle activities to a few major participations (as set out in the ApP White Paper), one of which is a long-baseline experiment, as set out in the CHIPP Roadmap.**
- **CHIPP should aim at enabling an active Swiss role in the European process and towards a visible contribution to a next long-baseline neutrino project.**

Strategy Update: g.

- Europe should support a diverse, vibrant theoretical physics programme, in close collaboration with experiments and extending to neighbouring fields such as astroparticle physics and cosmology and including high performance computing.

Action Item:

- **The CHIPP community should continue its actual wide activities in theoretical physics, but aim at closing gaps towards experiments at all universities. The extension with neighbouring fields – as planned for in 2011/2012 in the proposed NCCR – should be further pursued.**
- **The SERI should include the Distributed Computing and HPC activities in its roadmap.**
- **All players should start moving to global or at least national computing solutions (Academic Clouds, Big Data strategies, ...)**

Strategy Update: h.

- Experiments in Europe with unique reach – like precision measurements) should be supported as well as participation in experiments in other regions of the world.

Action Item:

- **The CHIPP community and the international community should take further advantage of the unique beams the PSI accelerator facility and engage in challenging experiments at low energy as set out in the Strategy Update and in the CHIPP Roadmap.**
- **The PSI should continue to pursue performance improving consolidation of the proton accelerator complex and maintain and develop its leading position at the high intensity, high precision frontier.**

Strategy Update: i.

- Detector R&D programmes should be supported strongly at CERN, national institutes and universities. The corresponding infrastructure and engineering capabilities should be maintained and further developed.

Action Item:

- **The CHIPP community should continue using the facilities and the excellence available in Switzerland.**
- **The SNSF should be open for supporting generic R&D projects in this field.**
- **The universities should make available the necessary support for maintaining the existing unique capabilities at their institutes.**

Strategy Update: j.

- CERN should seek a closer collaboration with ApPEC on detector R&D.

Action Item:

- **The CHIPP community should continue with the existing technology transfer between PP and ApP. Such transfer can even be increased in view of the newly defined strategy focus of Swiss ApP activities on CTA, DARWIN and LAGUNA-LBNO.**
- **SERI and SNSF should consider increased funding in the FLARE program to permit sustainable Swiss participation in international astroparticle physics projects.**

Strategy Update: k.

- CERN should maintain its capabilities to perform unique experiments and to work with NuPECC on topics of mutual interest.

Action Item:

→ The CHIPP community and the funding agencies should maintain the relation to NuPECC and the European nuclear physics community and in particular pay attention to common interest in fundamental physics experiments and in spin-offs and technology transfer.

Strategy Update: I.

- CERN should be the framework within which to organise a global particle physics accelerator project in Europe and also be the leading partner for such a project elsewhere, coordinating the European contributions.

Action Item:

→ **The SERI should act along these lines in the CERN Council and defend this philosophy in the international contacts at all levels.**

Strategy Update: m.

- CERN and the particle physics community should strengthen their relations with the European Commission.

Action Item:

→ The SERI should make sure that the relation between CERN and the EU is based on equal rights and reciprocity, and that the Swiss particle physics community is accepted at the EC side at the same terms and conditions as the particle physics community from the EU CERN Member States.

Strategy Update: n.

- Outreach and education should receive adequate funding and be recognized as a central component of the scientific activity.

Action Item:

- **The Cantonal and Federal funding authorities should require and allow that a small fraction of each research grant be reserved for outreach purposes.**
- **The SERI should insert such a provision in the ‘Leistungsvereinbarung’ with SNSF.**
- **The SNSF should aim at a sustained funding also in outreach matters and avoid a stop-and-go policy. (The presently running Agora project ‘Interactions’ was seeded by the SERI with the funding of “Verflixtes Higgs” – www.teilchenphysik.ch)**

Strategy Update: o.

- The High Energy Physics Technology Transfer Network should pursue and amplify its efforts.

Action Item:

- The SERI should play an active role in Technology Transfer and seek ways and means to bring the technology transfer offices located at the universities into a similar network, where information flows unhindered between all players.
- CHIPP should foster and help coordinate particle physics Technology Transfer activities among its member institutes especially already in early phases of projects – as planned for in 2011/2012 in the proposed NCCR.

Strategy Update: p.

- CERN, together with national funding agencies and universities should continue supporting and further developing coordinated programmes for education and training.

Action Item:

- The CHIPP community should continue with its well established CHIPP PhD Winter School and the Zuoz Summer School, open for participants from all Swiss and foreign universities.
- The CHIPP community should continue and enhance its promotion of the European Master Classes and should work continuously on bringing Swiss physics teachers to the Teachers Day at CERN.
- The Universities should further develop the doctoral programmes in particle and accelerator physics, which were funded through ProDoc.

Strategy Update: q.

- The European Strategy should be updated at regular intervals of about five years in the light of the experience gained since the last updates.

Action Item:

→ The CHIPP community should be ready with an update of its Roadmap in 2016, in order to have the Swiss input for the next European Strategy update at hand in time.