

Mandate of the "Physics Beyond Colliders" Study Group

CERN Management wishes to launch an exploratory study aimed at exploiting the full scientific potential of its accelerator complex and other scientific infrastructure through projects complementary to the LHC and HL-LHC and to possible future colliders (HE-LHC, CLIC, FCC). These projects would target fundamental physics questions that are similar in spirit to those addressed by high-energy colliders, but that require different types of beams and experiments.

This study should provide input for the future of CERN's scientific diversity programme, which today consists of several facilities and experiments at the Booster, PS and SPS, over the period until ~2040. Complementarity with similar initiatives elsewhere in the world should be sought, so as to optimize the resources of the discipline globally, create synergies with other laboratories and institutions, and attract the international community.

Scientific goal

The main goal of the Study Group is to explore the opportunities offered by the CERN accelerator complex to address some of today's outstanding questions in particle physics through experiments complementary to high-energy colliders and other initiatives in the world. These experiments would typically: *(i)* enrich and diversify the CERN scientific program, *(ii)* exploit the unique opportunities offered by CERN's accelerator complex and scientific infrastructure, *(iii)* complement the laboratory's collider programme (LHC, HL-LHC and possible future colliders). Examples of physics objectives include searches for rare processes and very-weakly interacting particles, measurements of electric dipole moments, etc.

Structure of the Study Group and deliverables

The group will be led by three coordinators representing the scientific communities of accelerator, experimental, and theoretical particle physics: Joerg Jaeckel (Heidelberg), Mike Lamont (CERN), Claude Vallée (CPPM, Marseille).

Following consultation with the relevant communities, they will define the structure and the main activities of the group and appoint conveners of thematic working groups as needed. They will call a kick-off meeting in 2016, organize regular meetings, and monitor the overall scientific activity. The scientific findings will be collected in a report to be delivered by the end of 2018. This document will also serve as input to the next update of the European Strategy for Particle Physics.