COLLOQUIUM

Future Circular Colliders at CERN

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4:00 p.m. - Wilson Hall, One West

The global Future Circular Collider (FCC) study is developing a 100-TeV hadron collider (FCC-hh) in a new 100 km long tunnel, i.e. about four times larger than the operating Large Hadron Collider (LHC). The FCC study also includes the design of a high-luminosity electron-positron collider (FCC-ee), which could be installed in the same tunnel as a potential intermediate step, a lepton-hadron collider option (FCC-he), as well as an energy upgrade of the LHC using the FCC-hh technology (HE-LHC).

The scope of the FCC study comprises accelerators, technology, infrastructure, detector, physics, concepts for worldwide data services, international governance models, and implementation scenarios. Among the FCC core technologies 16 T dipole magnets, based on Nb3Sn superconductor, as well as highly efficient superconducting radiofrequency systems for all collider scenarios.

The international FCC study is hosted by CERN and mandated to deliver a Conceptual Design Report together with a preliminary cost estimate by end 2018. Since February 2014, more than 75 institutes from 26 countries and four continents have joined the FCC collaboration.

In this seminar, we will report the motivation and the present status of the Future Circular Collider study and the emerging global collaboration, and discuss the major design challenges and R&D topics for the accelerators.