

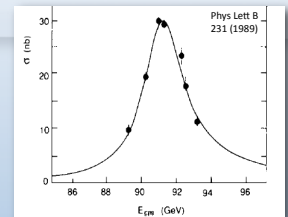
L3 EXPERIMENT: PRECISION MEASUREMENTS OF THE STANDARD MODEL PARAMETERS



60 YEARS OF SWISS SCIENCE AT CERN

3RD LETTER OF INTENT (L3) FOR AN EXPERIMENT AT THE LARGE ELECTRON POSITRON COLLIDER (LEP)

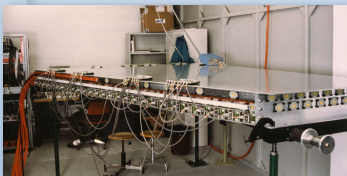
LEP and the detectors ALEPH, DELPHI, L3 and OPAL were designed to investigate the parameters of the Standard Model with unprecedented precision. The L3 experiment was optimized to measure γ , e^+, e^- and μ^+, μ^- . Already in 1989, the first measurement of the Z resonance established the existence of three neutrinos. Much more precise measurements did later put constraints on the masses of top-quark and Higgs particle, and did not show any hint of a deviation from the Standard Model predictions. LEP was stopped in the year 2000 to allow the construction of LHC in the same tunnel.



Contributing to all major subsystems, Switzerland played a significant role in construction and operation of L3.

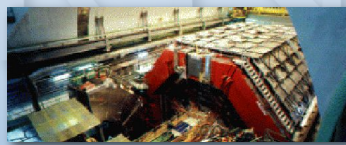
Muon Detectors

The Muon Detectors consisted of layers of multi-wire proportional chambers. ETHZ developed the laser alignment system for the barrel, and constructed the huge chambers for the forward and backward directions.



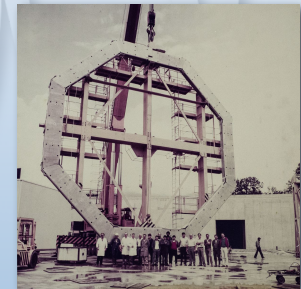
L3 Cosmics

Proposed and coordinated by ETHZ, a system was added to trigger also on atmospheric muons induced by Cosmic Rays.



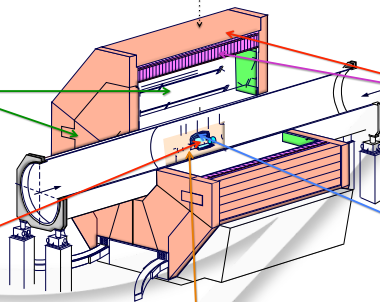
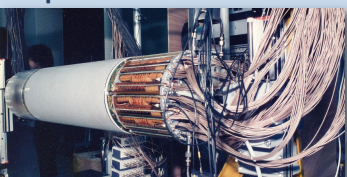
Magnet

Construction of the huge magnet and yoke was lead by ETHZ. Today, the same magnet is part of the ALICE detector @ LHC.



Vertex Detector

Space limitations did put strong constraints on the vertex detector. The wire chamber was designed and constructed by ETHZ, while UNIGE added a dedicated trigger system. Later, UNIGE and ETHZ contributed to an additional Si-strip microvertex detector.



Hadron Calorimeter



Testing, assembly and calibration of the HCAL, made from depleted U, was done by ETHZ and PSI.

ECAL

UNIL and ETHZ contributed to the electromagnetic calorimeter made from BGO crystals. In addition, UNIL worked on the cooling system and UNIGE on the calibration device.

