



Contribution ID: 673

Type: talk

Precision Electroweak measurements at the Future Circular Colliders

Saturday 25 July 2015 11:30 (20 minutes)

The prospects for electroweak precision measurements at the Future Circular Collider with electron-positron beams (FCC-ee) should provide improvements by a factor of order 25 over the present status, and constitute a broad search for the existence of new, weakly interacting particles up to very high energy scales. The Z mass and width, as well as the value of the electroweak mixing angle and b partial width, can be measured with very high precision at the Z pole thanks to an instantaneous luminosity five to six orders of magnitude larger than LEP. At centre-of-mass energies around 160 GeV, corresponding to the WW production threshold, the W mass can be determined very precisely with high-statistics cross section measurements at several energy points. These exceptional performance can be achieved thanks to continuous beam energy calibration by resonant depolarization of the beams that will be described. Considerable improvements of the strong coupling constant determination down to a precision of $\Delta\alpha_s(m_Z) \simeq \pm 0.0001$ will be possible with the measurements of the hadronic widths of the Z and W bosons. Similarly, a very precise determination of the top mass and top couplings to the Z and photon can be provided by an energy scan at the tt production threshold, from 340 to 360 GeV.

Author: TENCHINI, Roberto (Universita di Pisa & INFN (IT))**Presenter:** DAM, Mogens (University of Copenhagen (DK))**Session Classification:** Top and Electroweak Physics**Track Classification:** Top and Electroweak Physics