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Recent results from the CMS SMP-V group

We present recent results from the CMS Standard Model Physics - Vector boson (SMP-V) group. The heavy vector bosons W and Z are the carriers of the weak nuclear force and their properties are tightly coupled to those of other massive particles, such as the Higgs boson and top quark, via quantum corrections.
First, we discuss the experimental methods for vector boson measurements, such as the determination of luminosity, electron and muon reconstruction, their efficiencies, and energy scale calibration, as well as the estimate of neutrino momentum via the missing transverse momentum.
The dynamics of vector boson production are characterized by their cross sections which have been measured precisely at several center-of-mass energies during different runs of the LHC, both inclusively and differentially as a function of boson mass, transverse momentum, and rapidity.
The measurement of the invisible Z width allows to deduce a limit on the number of light neutrino generations.
The study of angular observables in Z boson decays to taus is used to measure tau polarization and the electroweak mixing angle.
Finally, searches for rare or forbidden decays of vector bosons into other Standard Model particles may reveal contributions from new physics interactions.

Type of contribution

Talk

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