



Séminaire du Laboratoire de l'Accélérateur Linéaire

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The global electroweak fit in a new era of precision

The global electroweak fit has a long tradition in particle physics. Over the last decades, it has been crucial in understanding the standard model and assessing its validity. It provided accurate predictions of free parameters of the theory, like the masses of the top quark and the Higgs boson before their discovery. Today, all fundamental standard model parameters, including information on the Higgs couplings, are experimentally determined. The knowledge of the mass of the Higgs boson improves the precision of the predictions in the global electroweak fit considerably. Very recently full electroweak two-loop calculations became available, which further improve the precision of the electroweak fit and allow for a more thorough uncertainty analysis. In this talk, I will present a status update of the global electroweak fit and perform a detailed study of the impact of theoretical uncertainties. The global fit proves to be a powerful tool to assess the validity of the theory and to constrain scenarios for new physics. Future measurements at the LHC and a future electron-positron collider promise to improve the experimental precision of key observables used in the fit. I will assess the influence of present and future experimental and theoretical sources of systematic uncertainties on the fit predictions. By using LHC measurements of the signal strength of Higgs production and decay channels, the present and future impact of electroweak precision observables is examined on a model with modified couplings of the Higgs boson to fermions and bosons.

Salle 101 du LAL - Bât. 200, Orsay

Thé et café seront servis 1/4h avant le séminaire