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Revisiting the Global Electroweak Fit of the Standard Model and Beyond with Gfitter

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The global fit of the Standard Model to electroweak precision data, routinely performed by the LEP electroweak working group and others, demonstrated impressively the predictive power following from electroweak unification. We have revisited this fit in view of (i) the new generic fitting package Gfitter, developed to allow flexible model testing in high-energy physics, and (ii) a more thorough statistical interpretation of the results. Gfitter is a modular fitting toolkit, which features predictive theoretical models as independent plugins, and a statistical analysis of the fit results using toy Monte Carlo techniques. The state-of-the-art electroweak Standard Model is fully implemented, as well as generic extensions to it. Theoretical uncertainties are explicitly included in the fit through scale parameters varying within given error ranges.

This talk introduces the Gfitter project, and presents the most recent results for the global electroweak fit in the Standard Model, and for a model with an extended Higgs sector (2HDM).

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