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Implications of LHC results for TeV-scale physics: signals of electroweak symmetry breaking

The recent discovery of a Higgs-like state at the LHC with a mass near 125 GeV has opened a new era of particle physics. It will be of utmost impor- tance to precisely determine the properties of this new state, with the aim to identify the mechanism of electroweak symmetry breaking (EWSB). This will require a comprehensive programme of high-precision measurements. Fur- ther measurements are also important in this context, in particular searches for manifestations of extended Higgs sectors, searches for new particles, and an improvement of electroweak precision measurements such as the mass of the top quark and the W boson as well as the effective weak leptonic mixing an- gle and triple gauge couplings. Finally the study of longitudinal vector boson scattering up to the highest energy scales is one of the key methods to discrim- inate between models and to reveal the nature of the symmetry breaking. The current experimental status of exploring the physics of electroweak symmetry breaking is briefly summarised, based on the results achieved at the LHC and elsewhere. The implications of the present and possible future results from the LHC for the physics programme of proposed future colliders are discussed.

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