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Precision calculations for Higgs Physics

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After the discovery of the Higgs boson at the LHC, the primary focus is now on the determination its couplings. Any deviation from the Standard Model predictions would indicate the presence of new physics. This talk will review the most relevant observables for this purpose, both from direct Higgs production at the LHC and from electroweak precision tests. For a reliable comparison between experiment and theory, higher-order radiative correction must be included in the computation of these observables. An overview of the most common calculational techniques will be given, in a form accessible to non-experts. Furthermore, I will summarize the current state of the art for the theoretical predictions of Higgs production at the LHC and electroweak precision observables within the Standard Model, and comment on the challenges that still need to be surmounted to keep theoretical uncertainties under control for the full LHC Higgs program.