

Precise predictions for the trilinear Higgs coupling in arbitrary models

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The trilinear Higgs coupling provides a unique opportunity to probe the structure of the Higgs sector, study the nature of the electroweak phase transition, and search for indirect signs of Beyond-the-Standard Model (BSM) Physics. Recently, it was also shown that confronting the prediction for the trilinear Higgs coupling with the latest experimental bounds opens a powerful new way to probe possible effects of BSM Physics arising from extended Higgs sectors, going beyond existing experimental and theoretical constraints

In this talk, I will present the new public tool anyH3, which provides predictions for the trilinear Higgs coupling to full one-loop order within arbitrary renormalisable theories. This program allows computing one-, two-, and three-point functions at one loop in an automated way, and moreover it offers a high level of flexibility in the choice between pre- or user-defined renormalisation conditions. I will review the main elements of the calculation and demonstrate features of anyH3. Finally, I will discuss concrete applications of this tool and give an update on extensions currently in progress.

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