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The Higgs Self-coupling Strategy at Linear e+e- Colliders

Wednesday 6 November 2024 14:10 (20 minutes)

Measuring the Higgs self-coupling is a key target for future colliders, in particular through di-Higgs production at e+e- Linear Colliders with GeV, e.g. at ILC, C3 or CLIC. This contribution will discuss the roles and the interplay of di-Higgs production processes at various collider energies, including the case of non-SM values of the self-coupling. Previous studies, already based on Geant4-based detector simulation, established that the Higgs self-coupling can be extracted with 10-27% precision and provided a solid understanding of the limiting factors. This provides a robust starting point to explore the potential of more modern and sophisticated reconstruction and analysis techniques. We review the impact of advanced, often machine-learning-based algorithms, including e.g. jet clustering, kinematic fitting and matrix element-inferred likelihoods on the reconstruction of ZHH events, and offer an outlook on what can be expected for the self-coupling measurement.

Primary track

Higgs physics at future colliders

Is the speaker a PhD student or post-doc?

Yes - I need some financial support (fee reduction) to attend Higgs 2024

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