

Higgs production in association with a Z boson at TeV-scale lepton colliders

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We study the neutrino-associated Zh production process at lepton colliders, whose cross section exceeds that of Zh production in the multi-TeV energy regime.

The scattering amplitudes are classified into three main groups according to the topology of the corresponding Feynman diagrams, and their interference patterns are systematically analyzed.

We demonstrate that the delicate gauge cancellations appearing at high energies in the unitary gauge are absent in the recently proposed Feynman-diagram gauge, which enables a transparent interpretation of physical distributions in terms of contributions from each subgroup.

In particular, we show that the interference among amplitudes in the Feynman-diagram gauge provides a clear physical understanding of the observed kinematic features.

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