

The 2022 International Workshop on the High Energy Circular Electron Positron Collider

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Helicity amplitude

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Multiple EW vector boson amplitudes are known to have bad energy behavior for individual Feynman diagrams, which causes many problems for numerical and theoretical analysis. Based on Goldstone equivalence theorem (GET), we introduce a new representation of Feynman rules that makes GET manifest, while reproduces the exact results of the amplitudes. The new helicity has no subtle gauge cancellation, every diagram has a specific physical interpretation, when the pole approaches on-shell. We implement this new Feynman rules into numerical codes of HELAS (Helicity Amplitude Subroutines) and study several process with the new HELAS.

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