

W-boson pair production at lepton colliders in the Feynman-Diagram gauge

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We calculate helicity amplitudes for $e^-e^+ \rightarrow W^-W^+$ analytically in the Feynman-diagram (FD) gauge. We show that, unlike in the unitary gauge, there is no energy growth of the individual Feynman amplitudes for the longitudinally polarized W bosons, and the contributions from the associated Goldstone bosons are manifest even without taking the high-energy limit. We also find that the physical distributions can be interpreted by the individual amplitudes in the FD gauge.

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