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Associated production of single top quark and W boson

One important aspect of single top-quark production is the sensitivity to non-SM couplings of the Wtb vertex. It provides direct extraction of the magnitude of V_{tb} matrix element of the CKM matrix by just measuring its cross-section. Among all modes of single top-quark production, only the associated production of single top quark with W boson (tW-channel) provides the real W boson. However, main challenge to observe tW subprocess is the interference with the top-quarks pair production at NLO. To overcome this difficulty, two methods were proposed “Diagram Removal” and “Diagram Subtraction”. The difference between the two is the measure of the size of interference. In this talk I’ll explain the implementation of Diagram Removal & Diagram Subtraction in Herwig++.

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