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Integration By Parts like identities in Schwinger-Feynman-Lee-Pomeransky parametrization

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The use of Integration-By-Parts (IBP) identities is currently an unavoidable step for the computation of scattering amplitudes. IBP identities have been traditionally constructed in momentum space and, more recently, by employing Baikov parametrization. In this talk, we show the construction of a system of IBP-like equations over parametric space, namely using Schwinger-Feynman parameters within Lee-Pomeransky representation (SFLP). Unlike traditional IBP approaches, in the SFLP framework, we obtain non-zero contributions from the surface term. We derive an explicit form for surface term contribution, employing elementary calculus, and explicitly show that surface terms are related to lower sectors in the decomposition. As an instructive example of the application of our framework, we reconstruct the complete IBP reduction in the simple case of the two-loop sunset diagram.

Summary

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