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Expansion by regions & Monte Carlo integration with pySecDec

Monday, 29 November 2021 19:00 (20 minutes)

pySecDec is a tool for Monte Carlo integration of multiloop Feynman integrals (or parametric integrals in general), using the sector decomposition strategy. Its latest release contains two major features: the ability to expand integrals in kinematic limits using expansion by regions approach, and the ability to optimize the integration of weighted sums of integrals maximizing the obtained precision within a constant time. I'd like to present these features in particular (based on arXiv:2108.10807), and the inner workings of pySecDec in general.

Significance

Both new developments in pySecDec are driven by practical demands of calculating higher-loop amplitudes: optimized integration of weighted sums provides significant time saving over the previously used naive strategy, and expansion by regions allowing access to kinematic regions previously inaccessible with pySecDec due to integrals with large scale ratios being inherently hard for Monte Carlo approaches. We believe these developments to be major new advancements for pySecDec and its users.

References

The latest release of pySecDec is described in arXiv:2108.10807.

Speaker time zone

Compatible with Europe

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