

## SecDec: a tool for numerical multi-loop/leg calculations

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Sector decomposition is a method to extract singularities from multi-dimensional polynomial parameter integrals in a universal way. Integrals of this type arise in perturbative higher order calculations in multi-loop integrals as well as in phase space integrals involving unresolved massless particles.

The program 'SecDec' will be presented, which applies iterated sector decomposition in an automated way, to produce a Laurent series in the regularisation parameter. The coefficients of this series are finite parameter integrals which are integrated numerically by Monte Carlo techniques.

The power of the program is illustrated by presenting results and timings for a number of cutting edge multi-loop integrals, e.g. 2-loop box integrals entering top quark pair production at NNLO or 4-loop propagators. Applications to integrals occurring in calculations of real radiation at higher perturbative orders will also be presented.

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