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Loop Tree Duality with generalized propagator powers: numerical UV subtraction for two-loop Feynman integrals

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An explicit Loop Tree Duality (LTD) formula for two-loop Feynman integrals with integer power of propagators is presented and used for a numerical UV divergence subtraction algorithm. This algorithm proceeds recursively and it is based on the R operator and the Hopf algebraic structure of UV divergences. After a short review of LTD and the numerical evaluation of multi-loop integrals, LTD is extended to two-loop integrals with generalized powers of propagators. The R operator and the tadpole UV subtraction are employed for the numerical calculation of two-loop UV divergent integrals, including quadratic divergences.

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