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LoopTransport: a library to solve differential equation systems using generalized series expansions

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Recent developments have shown that the numerical solution of loop integrals using generalized series expansions of associated differential equation (DE) systems allows for the calculation of state-of-the-art multi-loop problems with many scales. In principle the bottleneck of efficient numerical evaluations is then reduced to the IBP reduction to master integrals. We present a library to solve such DE systems in the canonical and non-canonical sectors with an application to the massive two-loop integrals in H+jet production. Through its implementation in the free open-source computer algebra system FriCAS, the library is compiled to efficient machine code and can be interfaced to other codes, as well as deployed in massively parallel cluster setups for precision phenomenology.

Primary author: NEUMANN, Tobias

Presenter: NEUMANN, Tobias

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