

## Loop-the-Loop-2: Feynman calculus and its applications to gravity and particle physics

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# On Loop Integral Numerical Evaluation with LINE

*Wednesday 12 November 2025 11:00 (30 minutes)*

The future of precision phenomenology depends on accurate and efficient evaluations of Feynman integrals, essential for higher-order radiative corrections. As experimental precision advances, the need for high-performance computational tools capable of handling complex multi-loop calculations becomes increasingly urgent. Efficient and scalable codes are key to making state-of-the-art theoretical predictions feasible for phenomenological studies. The differential equation method for master integral evaluation has recently emerged as a powerful and versatile approach, which can be adapted for either numerical or analytical approaches. In this talk, I will present LINE (Loop Integral Numerical Evaluation), an open-source C code devoted to the numerical evaluations of Feynman integrals. LINE unifies several functionalities into a single, coherent framework, enabling both direct numerical evaluations and propagation through differential equations with specified boundary conditions. LINE is written in C, with the goal of making it efficient and suited parallelized runs.

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