Abstract: Feynman integrals are the backbone of all higher-order calculations in perturbative quantum field theory. They are not only of formal interest, but they are also key to performing precise calculations for experiments.

In these lectures we review some recent developments in the understanding of the mathematics underlying Feynman integrals. We focus in particular on tools inspired from modern number theory and the theory of motivic periods, which have been instrumental in some of the most advanced computations for experiments in collider physics.

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