

On the Electron Self-Energy to Three Loops in Quantum Electrodynamics

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We report on the analytic calculation of the Electron Self Energy in Quantum Electrodynamics at three loops. Feynman integrals appearing in the problem are evaluated via the method of differential equations. In particular, we will discuss how to cast the system of differential equations – including elliptic secors – in an ϵ -factorized form via suitable transformation(s), thus (almost) trivializing the solution.

This is work in progress in collaboration with Claude Duhr, Christoph Nega, Lorenzo Tancredi and Stefan Weinzierl.

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