

Resurgence and Higher Loop QED

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We propose a new approach to multi-loop QED computations in constant background fields, based on an application of resurgent asymptotics to the extraction of strong-field and non-perturbative information from a limited number of terms of a weak-field expansion. The proposed method is demonstrated explicitly with the one-loop and two-loop expressions for the QED Euler-Heisenberg effective action, for which a surprising amount of strong-field and non-perturbative physics may be derived from just 10 terms of a weak magnetic field expansion.