

Exact perturbative methods

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Obtaining accurate predictions for quantum theories is of paramount importance. Perturbation series are often divergent and non Borel summable, making the problem challenging.

Here we further explore exact perturbation theory (EPT) in quantum mechanics, first proposed in [Serone '17]. In this context, we can compare EPT with the well established exact wkb (EWKB) method. For bounded systems, there are different ways of implementing EWKB which can lead to different quantization conditions, and we show that a clever choice gives Borel summable perturbative series.

This procedure is the hamiltonian counterpart of EPT, which manipulates path integrals. It underpins EPT and it allows us to prove Borel summability.

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