

Local renormalisation from Causal Loop-Tree Duality

Thursday 18 July 2024 20:40 (20 minutes)

In this talk, we report recent progress on the development of a local renormalisation formalism based on Causal Loop-Tree Duality. By performing an expansion around the UV-propagator in an Euclidean space, we manage to build counter-terms to cancel the non-integrable terms in the UV limit. This procedure is then combined with the so-called causal representation, and the UV expansion is performed at the level of on-shell energies. The resulting expressions are more compact, and they retain nice properties of the original causal representation. The proposed formalism is tested up to three-loops, with relevant families of topologies. In all the cases, we successfully cancel the UV divergences and achieve a smooth numerical implementation. These results constitute a first step towards a new renormalisation program in four space-time dimensions (by-passing DREG), perfectly suitable for fully numerical simulations.

Alternate track

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