

Abstract Submitted
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Semiclassical Trans-Series from the Perturbative Hopf-Algebraic Dyson-Schwinger Equations¹ MAX MEYNIG, GERALD DUNNE, University of Connecticut, MICHAEL BORINSKY, eth-its in Zurich — The seminal work of Dirk Kreimer and Alain Connes uncovered the structure underlying Renormalization in quantum field theory. This work has enabled perturbative calculations to incredibly high orders, notably through the Hopf-approximation of the Dyson-Schwinger equations. We study the Hopf approximation to the Dyson-Schwinger equations for a ϕ^3 theory in six dimensions. Our main new result is to decode the perturbative Hopf formulation to find a rich nonperturbative structure. Our results have the characteristics of semi-classical series involving instanton and anti-instanton interactions but arise from a purely perturbative formalism.

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