

Abstract Submitted
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UV Renormalization and Late-time Resummation of Correlation Functions in Minkowski. SPASEN CHAYKOV, NISHANT AGARWAL, University of Massachusetts Lowell, SINA BAHRAMI, Pennsylvania State University, RICHARD HOLMAN, Minerva Schools at KGI — I will present results on the UV renormalization and late-time behavior of correlation functions in self-interacting scalar field theories on a Minkowski background when starting the evolution at some initial time. In particular, we are interested in the unequal-time two-point correlator where we expect to see a breakdown of perturbation theory analogous to equal-time correlators on time-dependent backgrounds. I will first show that renormalization counterterms need to be considered in both the dynamics and the initial state. Taking these into account, we find a linear and log secular growth for interactions of mass dimension one and zero, respectively. I will next discuss the Weisskopf-Wigner method to calculate resummed correlators and show that it gives an exact exponentiation of the late-time perturbative result. Our results offer a potential path to understanding renormalization and late-time resummations in more complicated spacetimes with explicit time-dependence and/or a horizon.

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