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Perturbative renormalization of the semi-infinite massive ϕ_4^4 theory

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We give a rigorous proof of the renormalization of the ϕ_4^4 massive semi-infinite model using the renormalization group flow equations. We present the family of all admissible boundary conditions and the propagators associated to each boundary condition. Then we study the regularity properties of the support of the gaussian measure associated to the regularized propagator. We also present the considered action and set up the system of perturbative flow equations satisfied by the connected amputated Schwinger functions (CAS). To establish bounds on the CAS, being distributions, they have to be folded first with test functions. A suitable class of test functions is introduced, together with tree structures that will be used in the bounds to be derived on the CAS. We state and prove inductive bounds on the Schwinger functions which, being uniform in the cutoff, directly lead to renormalizability.

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Classification de Session: Theory

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