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Arising of mass in scalar quantum field theories.

We investigate massive models of quantum field theory of scalar field in logarithmic dimensions in Euclidean space. The Schwinger-Dyson equation and non-trivial solution for mass are considered in the paper.

The Schwinger-Dyson equation has the form:
$D^{-1} = \Delta^{-1} - \Sigma$ $where$ D $is a full propagator$, Δ is a bar propagator, Σ is a self-energy operator. In the minimal subtraction (MS) scheme it holds: $\Delta(p) = \frac{1}{p^2}$ $where$ p $is a momentum. The inverse full propagator has the following characteris$

$\frac{A}{p^2+m^2}$ $where$ A $is an amplitude$, m $is a mass$.

We investigate the scalar models ϕ^3, ϕ^4 and ϕ^6. For the theories ϕ^3 and ϕ^4 mass appears in the first order of perturbation theory whereas for the ϕ^6-theory the mass does not appear in the first order.

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