

# Gap-equations of radiative symmetry breaking in classically scale invariant models

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Motivated by addressing the hierarchy problem via the conformal standard model (cSM), we present a general formalism to analyze the generation of non-trivial minima in the one-loop effective potential using a set of exact criticality equations which, in analogy to the Nambu-Jona-Lasinio model, may be understood as gap-equations. Given the intuitive nature of these equations, we are able to systematically analyze the radiative spontaneous symmetry breaking (RSSB) in classically scale invariant multiscalar models. Using our approach reveals qualitatively new scenarios of RSSB compared to the Gildener-Weinberg approximation and allows for an intuitive investigation of fundamental properties of scale generation without making further assumptions with regard to classical scale-invariance. We also comment on the hierarchies of scales that are generated at one-loop level.

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