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Positivity bounds at one-loop level

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Parameters in an effective field theory can be subject to certain positivity bounds if one requires a UV completion that obeys the fundamental principles of quantum field theory. These bounds are relatively straightforward at the tree level, but would become more obscure when loop effects are important. In this talk, I will discuss the impacts of loop contributions to the interpretation of positivity bounds, using scalar theories and Scalar QED as examples. In particular, a strict positivity bound can only be implied when all contributions at the same loop order are considered, and the one-loop generated dimension-8 operator coefficients (as well as their beta functions) may not be subject to the tree-level bounds.

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