On the mapping between quantum propagators and high-energy effective theories

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Abstract

We investigate the mapping between quantum propagators and high-energy effective theories in $(2+1)$ dimensions. In particular, we study the map between the momentum and momentum square of the low-energy effective theory, which is encoded in terms of the momentum and momentum square of the propagators in the high-energy effective theory. We also study the map between the momentum and momentum square of the high-energy effective theory, which is encoded in terms of the momentum and momentum square of the propagators in the low-energy effective theory. We show that, in the case of low-energy effective theories, the map between the momentum and momentum square can be written as a map between the momentum and momentum square of the low-energy effective theory. We also show that, in terms of the momentum and momentum square, the map between the momentum and momentum square of the high-energy effective theory can be written as a map between the momentum and momentum square of the low-energy effective theory.