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One-loop effective action up to dimension eight

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Indirect searches for new physics require precise measurements of low-energy observables. The EFT framework suitably accommodates the new physics contributions to such observables. As we aim for higher precision, it becomes necessary to incorporate higher-dimensional operators into our analysis as well. In this context, I will discuss the matching of UV theory with low energy theory up to dimension eight. A few years ago, the matching of UV theory to low energy theory was generalised, and a master formula known as Universal one-loop effective action (UOLEA) was developed and it was restricted to dimension six. We have used the method of Heat-Kernel to extend the UOLEA to incorporate dimension eight terms.

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