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## One-loop corrections to ALPs effective couplings

The one-loop contributions to Axion-like-particles (ALPs)-SM couplings stemming from effective ALP operators, including all finite one-loop corrections, are presented. This is the first such analysis for most ALP-SM couplings. The complete leading-order (dimension five) effective linear Lagrangian is considered for an off-shell ALP. The results are timely because the level of experimental sensitivity to several ALP-SM couplings has reached a level where one-loop corrections are necessary, and in some cases they are the best tool to constraint some couplings.

For instance, ALP-WW interaction is hardly observed at tree level, but competitive constraints are obtained via its contribution to ALP- $\gamma\gamma$  interaction at one-loop order. The results are of particular impact on non-resonant LHC and accelerator searches of ALP coupling to  $\gamma\gamma$ ,  $ZZ$ ,  $Z\gamma$ ,  $WW$  and fermions.

### Collaboration / Activity

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