

EFTs of axions and gauge bosons in the light of UV models

Wednesday 23 September 2020 17:45 (15 minutes)

I will revisit EFT couplings between an axion and massive gauge bosons. It is known that massive vectors allow for more freedom than massless ones when building an EFT, thanks to the existence of the non-linear realization of (gauge) symmetries. It is also known that such a non-linear realization must sometimes be used even to describe physics at energy scales above the electroweak vev, due to non-decoupling effects. I will discuss the relevance and impact of such considerations on the physics of an axion or ALP, in particular when it is coupled to the SM electroweak gauge bosons. For that, I will consider UV models of spontaneous symmetry breaking with heavy chiral matter, and discuss both Peccei-Quinn anomaly matching and the breakdown of “expected” observational correlations at leading order.

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