

Astrophobic axions, precisely

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We study the impact of running effects on QCD axion phenomenology. Focusing on variants of DFSZ model, it is possible to suppress simultaneously both the axion couplings to nucleons and electrons, realising the so-called astrophobic axion scenarios, wherein the tight bounds from SN1987A and from stellar evolution of red giants and white dwarfs are greatly relaxed. This suppression is not spoiled once renormalization group effects are included in the running of axion couplings. Given that astrophobic axion models generally feature flavour violating axion couplings, we also assess the impact of renormalization group effects on axion-mediated flavour violating observables.

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