

Signatures of astrophobic QCD axion

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In minimal models of the QCD axion that aim to solve the strong CP problem the axion decay constant is constrained to be above $O(10^9)$ GeV due to astrophysical constraints from the observation of the neutrino burst in SN1987A and the cooling of neutron stars. Such large values of the axion decay constant exclude a possibility to discover axions in near-future helioscopes such as IAXO and do not allow to explain the observed baryon asymmetry via minimal axiogenesis. I will present models of so-called astrophobic QCD axion in which astrophysical constraints are relaxed and allow for the axion decay constant as small as $O(10^7)$ GeV. I will discuss implications of such models for axion dark matter and axiogenesis and possible cosmological and experimental probes of astrophobic axions.

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