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Searching for Dark-Matter Axions.[1]

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The axion is a hypothetical elementary particle arising in the 1970's from an elegant solution to the Strong CP problem in Quantum Chromo Dynamics. Light QCD axions (masses $<10^{-3}$ eV/c^2) would have extraordinarily feeble interactions with normal matter and radiation, and these axions have the properties of an ideal dark-matter candidate. Axions have been searched for since their inception. However, light axions constituting dark matter are so feebly coupled that it is only recently that detection technology has advanced to where such axions might be detected. Several large searches are in the construction and commissioning phase, with new projects in the development phase. There are also concepts for new detector technologies aimed at improving the sensitivity and axion mass-reach. These searches would have the potential to detect even the more pessimistically-coupled dark-matter axions should they contribute a fraction of the local Milky Way dark-matter halo. This talk discusses the dark-matter axion experimental landscape and the prospects for their discovery.

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