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## The QCD axion: theory, phenomenology, and searches

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The QCD axion – which emerges as a solution to the strong CP problem – would unavoidably contribute both the dark matter and dark radiation in the early and present Universe. The rich phenomenology brought in by the theory of the QCD axion depends on various components such as the axion energy scale, the details of the production mechanism, and the thermal history of the early Universe. We revise the recent improvements on the theory, astrophysics, and phenomenology of the QCD axion, as well as the search strategies that will look for these particles in the coming years. Talk based on <https://arxiv.org/abs/2003.01100>

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