

Experimental review of ALP searches at accelerators

mardi 6 août 2024 09:10 (30 minutes)

The current status and future prospects of searches for axion-like particles (ALPs) at accelerators will be summarized. I will first discuss beam-dump and fixed-target results, where the ALPs are produced via the Primakoff effect and decay into a pair of photons, covering the mass range $m_a \approx 10^{-3} - 0.1$ GeV. Constraints on ALPs with masses above a few hundred MeV that couple to photons have been set at e+e- colliders (BES-III, B factories) and at the LHC (up to a few TeV) through searches for new $a \rightarrow \gamma\gamma$ resonances. The LHC has extended those searches to include rare Z or Higgs bosons decays in tri-, and four-photon final states. Factors of 10–100 improvements in the current sensitivity are expected in the next decade, and orders-of-magnitude further at future colliders such as the FCC.

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