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Astrophysical gamma-ray probes of ALPs

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Axion-like particles (ALPs) are quite similar to the axion and are predicted by several extensions of the Standard Models, especially by superstring theories. However, at variance with the axion, they couple only to two photons, and this fact makes them quite elusive. Yet, since 2007 it has been recognized that they can play a crucial role in high-energy astrophysics. This talk reports some results that have been obtained in this field, and especially some hints of their existence arising from the fact that they solve some observed anomalies. The possibility that they are cold dark matter candidates is stressed, along with the fact that for the model parameters required by the above hints they can be detected at ALPS II and IAXO.

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