The Axion Quest 2024 conference - 20th Rencontres du Vietnam

ID de Contribution: 51

Type: Non spécifié

ALP anarchy

mardi 6 août 2024 15:40 (30 minutes)

String theory models generically predict the existence of multiple axion-like particle (ALP) fields, which can act as both dark matter and dark energy as well as solving the strong CP problem. I will motivate and discuss the phenomenology of systems with multiple ALPs which can undergo oscillations akin to neutrino oscillations. I will explore this phenomenology in some of the leading ALP search strategies, including the CERN Axion Solar Telescope and the gamma-ray spectra of distant blazars. We find that ALP anarchy models can predict drastically different results than single ALP models.

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