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Particle Physics at LPTHE

Vendredi 5 Avril 2024, 14 :00
LPTHE, Library and Zoom (link in the comments)(https ://cern.zoom.us/j/63031219326?pwd=STlDY2l0UTZOTWd3Ty8zaWVQSzNTdz09)
Domaines : hep-ph

Titre : *Finding Axions in a Universe of Data and Envisioning Their Use as Multi-Messenger Probes*

Orateur : **Sebastian Hoof (Padova University)**

Résumé : *An ever-growing number of experiments is exploring the remaining axion parameter space, with the exciting prospect of discovering theoretically preferred QCD axion models. This talk discusses how the resulting wealth of data can be leveraged to study axion models and parameters, focussing on my contributions to both the model landscape and phenomenology. Using modern statistical analysis techniques, we can extract the maximal amount of information from the data and learn about axion parameters and their UV structure. I will also entertain the prospects of an axion discovery, which would open up the possibility of using axions as multi-messenger probes. At the example of solar axions, I will demonstrate the points above : how the next generation of helioscopes could potentially discover axions, determine all related model parameters and UV structure, as well as study solar properties such as solar metallicity, macroscopic B-field or temperature profiles. I will conclude by commenting on complementary approaches and related ideas.*