

Particle Physics on the Plains 2022 Part 2



Contribution ID: 51

Type: **not specified**

Hunting Gluonic ALPs

Saturday 22 October 2022 14:00 (35 minutes)

Axion coupling to gluons is the defining property that connects it to the Strong CP puzzle. People have recently considered heavier axions, often dubbed Axion-Like-Particles (ALPs), as a generic EFT for pseudo-scalars. However, the effects have mostly been focused on other couplings as they are much easier to calculate and observe. In this talk, I will describe the attempt to consider Strong-CP solving heavy axions that beneficially are more stable potential against Planck suppressed perturbations. The axion mass and potential receive reinforcement from a mirror sector. Then, I will describe a class of searches motivated by this consideration and the generic considerations for gluonic ALPs. The searches for such gluonic heavy axions are challenging due to the typical large QCD background. New search ideas, projections, and results at the LHC, FASER, DUNE, and ArgoNeuT will be presented.

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Session Classification: Session 3