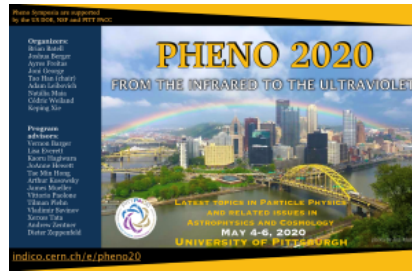


## Phenomenology 2020 Symposium



Contribution ID: 936

Type: **Parallel Talk**

# The High Quality QCD Axion and the LHC

*Tuesday 5 May 2020 16:30 (15 minutes)*

The QCD axion provides an elegant solution to the Strong CP Problem. While the minimal realization is vulnerable to the so-called “Axion Quality Problem”, I will consider a more robust realization in the presence of a mirror sector related to the Standard Model by a (softly broken)  $Z_2$  symmetry. Interestingly, the resulting “heavy” axion has a large and uncharted parameter space where it behaves as a Long-Lived Particle (LLP). By considering the defining axionic coupling to gluons, I will argue that the long-lived nature of the signal can be used to veto background, and evaluate the prospect of discovery of GeV scale axions at the HL-LHC.

## Summary

**Authors:** KUMAR, Soubhik (University of Maryland); Prof. HOOK, Anson (University of Maryland, College Park); LIU, Zhen (Fermilab); SUNDRUM, Raman (University of Maryland)

**Presenter:** KUMAR, Soubhik (University of Maryland)

**Session Classification:** Axions & ALPs II

**Track Classification:** Axions & ALPs