Contribution ID: **39** Type: **Regular talk**

Probing the Gauge-boson Couplings of Axion-like Particle at the LHC

Friday, 27 June 2025 13:30 (30 minutes)

In this work, we calculate the sensitivities on the gauge-boson couplings g_{aZZ}, $g_{aZ\gamma}$, and g_{aWW} of an axion-like particle (ALP) that one can achieve at the LHC with $\sqrt{s} = 14$ TeV and integrated luminosities of 300 fb^{-1} (current run)
and 3000 fb^{-1} (High-Luminosity LHC). We focus on the associated production processes $pp \to Za \to (l^+l^-)(\gamma\gamma)$ and $pp \to W^{\pm}a \to (l^{\pm}\nu)(\gamma\gamma)$. We show that better ensitivities on these gauge couplings can be achieved at the LHC for $M_a = 1 - 100$ GeV, down to the level of $10^{-4}\,\mathrm{GeV}^{-1}$. In conclusion, this study emphasizes the significance of the investigated channels in constraining the ALP couplings at the LHC, offering valuable insights for future experiments dedicated to ALP detection.

Please choose your topic

Dark Matter

Primary author: WANG, Chen (National Tsing Hua University)

Presenter: WANG, Chen (National Tsing Hua University)

Session Classification: Dark Matter