



Contribution ID: 6

Type: **Poster Presentation**

## Probing Axion-Like Particles at LHC

Thursday, 6 July 2023 15:40 (1 minute)

Axion-like particles (ALPs) are well motivated new particles that serve as candidates of beyond the Standard Model studies (BSM). In this work, we propose to probe the ALPs through  $p p \rightarrow a j j$  at the Large Hadron Collider at energy 14 TeV. The considered ALP production is both t-channel and s-channels. We demonstrate that we could provide constrains the effective coupling strength between ALPs and electroweak bosons ( $W^\pm$ ,  $Z$ ,  $\gamma$ ) in a mass range  $M_a$  well below 500 GeV. Using  $\chi^2$ -squared analysis both on cross-sections and also on distributions, we aim to improve on the previously calculate bounds to better constrain the coupling strengths of ALPs with electroweak bosons at LHC for channels  $W W$ ,  $\gamma\gamma$ ,  $ZZ$  and  $Z\gamma$  respectively and with further decay  $a \rightarrow \gamma\gamma$  while considering the available couplings  $g_{\gamma\gamma}$ ,  $g_{aWW}$ ,  $g_{a\gamma Z}$  and  $g_{aZZ}$ .

### Apply to be considered for a student ; award (Yes / No)?

Yes

### Level for award;(Hons, MSc, PhD, N/A)?

MSc

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**Session Classification:** Poster Session 2

**Track Classification:** Track B - Nuclear, Particle and Radiation Physics