

## Searching for a new leptophilic vector boson $Z'$ with four-muon final state with the ATLAS detector

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The talk presents a search for a new leptophilic vector boson  $Z'$  decaying into the four-muon final state using the data collected by ATLAS detector in the year 2015-2018. A moderate excess of 4 $\sigma$  events with a  $\mu^+\mu^-$  pair is the experimental signature for this study. The gauge boson  $Z'$  is predicted by the highly motivated gauged  $U(1)_{L\mu}$  model, which is the simplest extension of the Standard Model (SM). The model addresses the observed  $g-2$  of the muon anomalous magnetic dipole moment and the B physics anomalies. At the same time, the model probes physics and cosmology outstanding questions related to the dark matter and neutrino mass.

### Are you are a member of the APS Division of Particles and Fields?

Yes

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