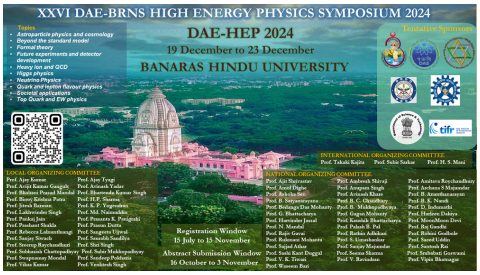

Contribution ID: **293** Type: **Oral**

Probing the muon g-2 anamoly through precision hadronic cross section measurements at the Belle II.

The study aims to precisely measure the $\pi^+\pi^-$ and $\pi^+\pi^-\pi^0$ cross sections from e^+e^- collision data at Belle II. These measurements are intended to improve the theoretical predictions of the muon's anomalous magnetic moment, currently showing a 5.1-sigma deviation from Standard Model expectations—a hint of possible new physics. Using high-luminosity data at Belle II, we employ the initial-state radiation (ISR) technique to achieve continuous cross-section measurements across energy ranges starting from the dipion threshold, reducing systematic uncertainties. The three-pion cross-section has recently been measured, and we are now targeting 0.5% precision in the two-pion cross-section. These results are essential for calculating the hadronic vacuum polarization (HVP) contribution, the largest source of uncertainty in muon anomaly predictions due to the complexities of QCD. This work pushes the boundaries of the Standard Model and offers insights that may guide potential extensions to current theories.

Field of contribution

Experiment

Author: SHARMA, Gaurav

Co-author: LIBBY, James

Presenter: SHARMA, Gaurav

Track Classification: Beyond the standard model