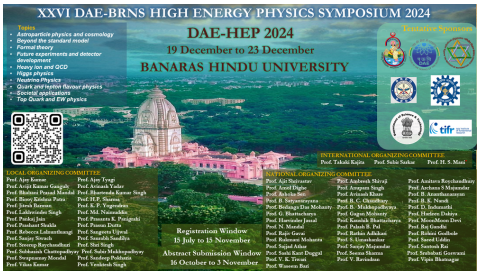

Contribution ID: **111** Type: **Postar**

Mass Spectra and Spin-Parity Analysis of Newly Observed $\Xi_b^{'}$ Baryons

In 2021, the LHCb Collaboration observed three new Ξ_b baryonic states: $\Xi_b(6227)$, $\Xi_b(6327)$, and $\Xi_b(6333)$. The spin-parity of these states remains undetermined. This study examines the mass spectra of the $\Xi_b^{'}$ baryon. To achieve this aim, we utilize the framework of the relativistic flux tube model, incorporating a heavy bottom quark and a light diquark representation of baryons. We incorporate the spin-dependent interactions in the limit of heavy quark symmetry. The results obtained align well with the existing experimental masses. The findings indicate that the $\Xi_b(6227)$ is a viable candidate for the P-wave $\Xi_b^{'}$ baryon with J^P value $\frac{1}{2}^-$ or $\frac{3}{2}^-$. Additionally, the baryons $\Xi_b(6327)$ and $\Xi_b(6333)$ can be effectively understood as P-wave $\Xi_b^{'}$ baryons with J^P values $\frac{3}{2}^-$ and $\frac{5}{2}^-$, respectively. This study can contribute to constructing the highly excited states of the $\Xi_b^{'}$ baryonic family.

Field of contribution

Phenomenology

Authors: JAKHAD, Pooja; Dr RAI, Ajay Kumar (Sardar vallabhbhai National Institute of Technology-Surat)

Presenter: JAKHAD, Pooja

Track Classification: Heavy ion and QCD