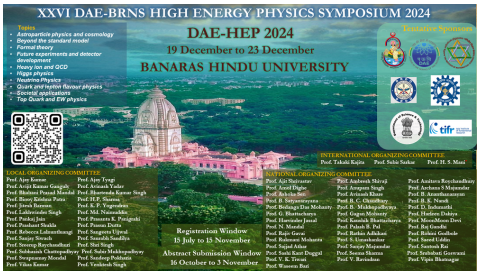

Contribution ID: **454** Type: **Postar**

Future collider prospect study of Vector Like Lepton through Leptoquark decay at the HL-LHC

Vector-like leptons (VLLs) are hypothetical heavy partners of Standard Model (SM) leptons and are present in many extensions of the SM. In specific quark-lepton unification theories, VLLs coexist with leptoquarks (LQs), another proposed colored particle that connects the quark and lepton sectors. Because VLLs are color-neutral particles, their production is primarily governed by weak interactions, making them generally suppressed. In this study, we propose an interesting production mechanism for VLLs via the decay of LQs. We explore the prospect of producing VLLs at the High-Luminosity Large Hadron Collider (HL-LHC) through various production channels involving LQs. We consider VLL production from the decay of both scalar and vector LQs. We also combine various production channels to enhance the sensitivity.

Field of contribution

Phenomenology

Author: Ms DUBEY, Shruti (IISER Thiruvananthapuram)

Co-authors: Mr SHARMA, Rachit (IISER Thiruvananthapuram); Dr MANDAL, Tanumoy (IISER Thiruvananthapuram); Dr MITRA, Subhadip (International Institute of Information Technology (IIIT) Hyderabad); KUMAR, nilanjana

Presenter: Ms DUBEY, Shruti (IISER Thiruvananthapuram)

Track Classification: Beyond the standard model