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NOTICE

Ph.D. Thesis Defense (Viva-voce Examination) of Ms. Radhika Vinze

Supervisor – Prof. Anuradha Misra
Co-supervisor – Prof. Sreerup Raychaudhuri

Title of Thesis - Signals for Extensions of the Standard Electroweak Model and Backgrounds in the context of Collider Studies

In this thesis work, we consider application of the Stuckelberg mechanism in two different ideas of beyond Standard Model(SM) studies. Firstly, we consider a U(1) extension of the SM with Stuckelberg mechanism, in which, when all the consistency constraints are considered, we get a phenomenologically viable model which has a massive Z' , a massive Stuckelberg scalar along with new interactions between these new fields and the SM fields. After working out the mass spectrum of the new fields and Feynman rules of the new interactions in this model, we check the collider signatures of the model. In another work, we work out the Stuckelberg - supersymmetric extension of the QED which contains infrared divergences due to the presence of a massless vector field. We show that when a Stuckelberg scalar superfield is added in the supersymmetric QED, infrared divergences cancel at one loop level. We explicitly work out the self energy correction and vertex corrections diagrams.

Date - 12th October 2023, Thursday Time – 3:00 pm

Link - <https://us06web.zoom.us/j/82783045466?pwd=REtHVuAhvLbNXin6V3FaHLGJ9FyaBl.1>

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