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Particle Physics Seminars at IJCLab

Vendredi 4 Octobre 2024, 11 :00
IJCLAB, 100/2-A201 - Salle A201 (IJCLab)
Domaines : hep-ph

Titre : *QCD+QED corrections to Light by Light scattering at NLO*

Orateur : **Ajjath Ah (LPTHE, Sorbonne Université)**

Résumé : *In this talk I plan to discuss the QCD+QED corrections to Light by Light scattering (LbL) process at next-to-leading order (NLO). The recent experimental observation of this fundamental process at the Large Hadron Collider has revived the interest to precisely predict its cross-section. We discuss two radically different computational approaches, both exact in the fermion mass dependence, thus offering a strong cross-check of our results. The first approach is a fully analytic method to calculate compact and well-organized two-loop helicity amplitudes. The second one is entirely numerical and leverages the Local Unitarity construction. Our two calculations agree with each other and conclude that including the exact fermion mass contribution typically increases the size of the NLO corrections. We also compare our results with the ATLAS measurement of LbL in ultra-peripheral lead-lead collisions, and find that the inclusion of exact NLO corrections reduces, but does not eliminate, the existing tension with theoretical predictions.*