

Contribution ID: 3353 Type: Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)

(G*) Higher-Order Leptonic Corrections in Covariant Approach

Monday 6 June 2022 13:15 (15 minutes)

In order to search for the physics beyond the Standard Model at the precision frontier, it is sometime essential to account for the Next-to-Next-Leading Order (NNLO) corrections theoretical calculations. Using the covariant approach, we calculated the full electroweak leptonic tensor up to quadratic (one loop squared) NNLO (α 3) order, which can be used for the processes like e-p and μ -p scattering relevant to MOLLER (background studies) and MUSE experiments, respectively. In the covariant approach, we apply unitary cut of Feynman diagrams and separate them into leptonic and hadronic currents and hence, after the squaring matrix element, we can obtain the differential cross section up to NNLO level.

In this presentation, I will quickly review covariant approach and provide our latest results for quadratic QED and electroweak corrections to e–p and μ –p scattering processes.

Author: GHAFFAR, Mahumm (Memorial University of Newfoundland)

Co-authors: Dr BARKANOVA, Svetlana (Memorial University of Newfoundland Grenfell Campus); Dr ALEK-SEJEVS, Aleksandrs (Memorial University of Newfoundland Grenfell Campus)

Presenter: GHAFFAR, Mahumm (Memorial University of Newfoundland)

Session Classification: M2-4 Precision Techniques in Nuclear and Particle Physics (DNP) | Techniques de précision en physique des particules et des noyaux (DPN)

Track Classification: Technical Sessions / Sessions techniques: Nuclear Physics / Physique nucléaire (DNP-DPN)