Contribution ID: **90** Type: **Plakat // Poster**

Study of Two Photon fusion processes at LHC to probe Electromagnetic Structure of Proton

Monday, 8 September 2025 19:00 (20 minutes)

We investigate exclusive dilepton production in proton-proton collisions at the Large Hadron Collider (LHC) via two-photon interactions as a means to probe the internal structure of the proton, particularly its electromagnetic charge radius. Our theoretical framework enables calculations in both momentum space and impact parameter space, providing control over the collision geometry and access to a wide kinematic range. By comparing model predictions using dipole and Gaussian electromagnetic form factors with experimental cross-section data at center-of-mass energies of 7 TeV and 13 TeV, we assess the model's ability to describe photon-photon interaction processes. The results show that the dipole form factor offers a better agreement with the data, providing valuable insights into the spatial charge distribution within the proton. Also, the impact parameter space approach provide full geometrical control over the collision, then the process is purely QED, it enables a precise determination of the proton radius.

Primary authors: KRISHNA, Nikhil (Institute of Nuclear Physics, Krakow); Dr KLUSEK GAWENDA, Mariola (Institute of Nuclear Physics, Polish Academy of Sciences)

Presenter: KRISHNA, Nikhil (Institute of Nuclear Physics, Krakow)

Session Classification: Sesja plakatowa

Track Classification: Fizyka cząstek elementarnych // Particle physics