
Matthias Heller

Leading order corrections to the Bethe-Heitler process in the $\gamma p \rightarrow l^+ l^- p$ reaction

24th May 2019

2:15 pm

Minkowski room (Physics building, 05-119)

Abstract

An upcoming experiment at MAMI (Mainz) will test lepton universality comparing the cross sections of muon- and electron-pair photoproduction on proton: $\gamma p \rightarrow l^+ l^- p$. To exclude a scenario of broken universality at percent level, precise knowledge of the electromagnetic radiative corrections is required. We evaluate all one-loop QED corrections and show that two-photon exchange with both photons attached to the proton line vanishes after averaging over di-lepton angles. We point on the relatively small radiation off the proton. We compare the full one-loop calculation with a soft-photon approximation of the same order.