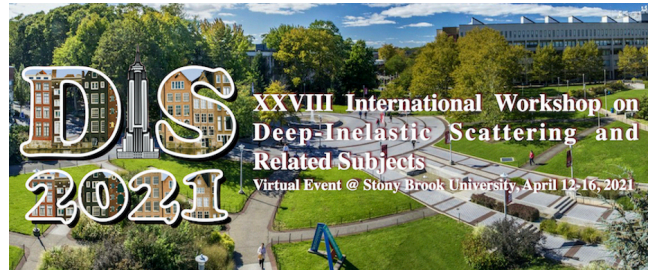


# XXVIII International Workshop on Deep-Inelastic Scattering and Related Subjects



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## Central dilepton production in proton-proton collisions with rapidity gap and with forward protons

*Wednesday, 14 April 2021 12:15 (18 minutes)*

We discuss mechanisms of dilepton production in proton-proton collisions with rapidity gap in the main detector and one forward proton in the forward proton detectors. This is relevant for LHC measurements by ATLAS+ALFA and CMS+TOTEM. The calculations are performed including transverse momenta of the virtual photons and using relevant off-shell matrix elements. Differential distributions in  $\xi_{1/2}$ ,  $M_{ll}$ ,  $Y_{ll}$ ,  $p_{t,ll}$  are shown and the competition of different mechanisms is discussed. Both double-elastic and single-dissociative processes are included in the calculation. We discuss also mechanism with one forward  $\Delta^+$  isobar, or other proton resonances in the final state not discussed so far in the literature. The role of several cuts is studied. The rapidity gap survival factor is calculated for each contribution separately. The gap survival factor for the single-dissociative mechanism are calculated as due to minijet emission into the main detector. The corresponding gap survival factor depends on the invariant mass of the dilepton system as well as the mass of the proton remnant. The gap survival with and without proton measurement in forward proton detector are compared and the underlying dynamics is discussed. The dependence on the parametrization of the proton structure functions is shown in addition.

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