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Elastic photon-initiated production at the LHC: the role of hadron-hadron interactions

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We discuss the role of additional hadron-hadron interactions in elastic photon-initiated production at the LHC, both in proton and heavy ion collisions. We in particular assess different sources of uncertainty associated with these cross sections, and compare with other calculations in the literature. A key result of our analysis is that the uncertainty associated with the survival factor is small, and it is only by taking very extreme and rather unphysical variations in the modelling of the survival factor that significant differences in the predicted cross sections. This underlines the basic, rather model independent, point that a significant fraction of elastic photon-initiated scattering occurs for hadron-hadron impact parameters that are simply outside the range of QCD interactions, and hence this sets a lower bound on the survival factor in any physically reasonable approach.

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