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Two-photon exchange effects in muonic hydrogen

Motivated by the expected improvement in the experimental determination of the μH Lamb shift measurement, I will present an updated fit of the unpolarised nucleon structure functions from available data in the nucleon resonance region in combination with Regge fits to the high-energy and deep inelastic region. The evaluation of the structure functions in the resonance region is building upon earlier work describing the resonance electrocouplings from exclusive data. The new fits of exclusive data will be a crucial part of a new parametrisation of the nucleon inelastic structure functions valid in a broad kinematic range. For the high-energy region, we start from the Regge-like parametrisation used for the structure functions $F_{1,2}$ in previous studies. The resonance and Regge regions are connected through analytic parametrisations constrained from inclusive electron scattering data from JLab. In this poster, I will present first results on the new parametrisation of nucleon unpolarised structure functions which will lead to updated data-driven evaluations of the two-photon exchange effects in the μH Lamb shift.

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