Contribution ID: **22** Type: **not specified**

Isolating the Odderon in central production in high energy pA and AA collisions

Thursday, 29 September 2022 12:25 (20 minutes)

We study the rapidity dependence of the central exclusive production cross sections of C-even mesons in pA and AA collisions, where A is a heavy ion. We observe qualitatively different behaviour of the contributions arising from photon-Odderon and Pomeron–Pomeron fusion mechanisms. This can be used to extract the Odderon signal from C-even mesons exclusively produced in the forward region. Estimates for f2 meson production, obtained using expected values of the Odderon cross section, indicate that the photon-Odderon contribution may exceed by a few times the Pomeron-induced background in Pb–Pb collisions. Moreover, the Odderon effect can be clearly seen in terms of the asymmetry in pA and AA collisions with the beam and target reversed. The photon–Odderon contribution has a large normalisation uncertainty but the enhanced cross-section in the forward region combined with a large asymmetry increases the chance of experimentally detecting the Odderon.

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Session Classification: Soft and low-mass diffraction

Track Classification: Soft and low-mass diffraction