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Model-independent results for Odderon-exchange based on new TOTEM data at 8 TeV

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We analyze, model-independently, the scaling properties of the differential cross-section of elastic proton-proton cross-sections, including new TOTEM data published in 2022 at sqrt(s) = 8 TeV. We show that outside the signal region for Odderon exchange, the scaling function of elastic proton-proton data at 8, 7, 2.76 TeV and that of elastic proton-antiproton scattering data at 1.96 TeV are the same.
We confirm that the new TOTEM data at 8 TeV are vital as they strengthen further the statistically significant, model-independent signals for Odderon exchange. Last but not least, we present a new, simple, and straightforward method to demonstrate the existence of Odderon exchange from sqrt(s) = 0.546, 0.630, and 1.96 TeV proton-antiproton as well as sqrt(s) = 2.76, 7, 8 and 13 TeV proton-proton elastic scattering data, without any model-dependent contributions to the analysis of the statistical significance of odderon exchange.

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