

New Trends in High-Energy Physics



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The shape of the interaction region of colliding protons in a Regge model

A complementary way to obtain some information about the high-energy scattering processes is by passing from the momentum transfer to the impact parameter space through a Fourier-Bessel transform. In this work, we analyze the spatial structure of the interaction region of two colliding protons in the light of the recent TOTEM data using a dipole Regge model. The discrepancies of the inelasticity profile from a Gaussian shape can be ascribed to the two prominent structures seen upon the otherwise exponential diffraction cone, namely the “break” and the diffraction minimum. The long tail at large impact parameters is related to the low- $|t|$ “break” while the suppressed behavior at small impact parameter values is related to the diffraction minimum.

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