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## Asymptotic Scenarios for the Proton's Central Opacity: An Empirical Study

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We present a model-independent analysis of the experimental data on the ratio  $X$  between the elastic and total cross-sections from  $pp$  and  $\bar{p}p$  scattering in the c.m. energy interval  $5\text{GeV}-8\text{TeV}$ . Using a novel empirical parametrization for that ratio as a function of the energy and based on theoretical and empirical arguments, we investigate three distinct asymptotic scenarios: either the black-disk (BD) limit or scenarios above and below that limit. Our analysis favors a scenario below the BD, with asymptotic ratio  $X=0.36 \pm 0.08$ . Assuming the saturation of the Pomplun bound, the predicted asymptotic ratio of the soft diffractive cross-section to the total cross-section reads  $0.14 \pm 0.08$ .

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