Table 36.2: Regge theory provides a simple and compact description of total cross sections. It is sufficient to write $\sigma_{\text{total}} = X\, s^{\epsilon} + Y\, s^{-\eta}$, where the first term arises from pomeron exchange and the second from ρ, ω, f, a exchange. We list the results of A. Donnachie and P.V. Landshoff, Phys. Lett. **B296**, 227 (1992). Simultaneous fits were first made to pp and $\overline{p}p$ data for $\sqrt{s} > 10$ GeV, requiring the same values of X, ϵ, and η for both reactions. They obtained

$$\epsilon = 0.0808 \qquad \eta = 0.4525\ .$$

The same values of ϵ and η were used in fits to other reactions. For other pairs of reactions of the form ab and $a\overline{b}$, fits were made for a common value of X and a value of Y, using data with $\sqrt{s} > 6$ GeV. These fits are shown by the gray background curves on the following graphs.

Reaction	X (mb)	Y (mb)
$\overline{p}p$	21.70	98.39
pp	21.70	56.08
$\overline{p}n$	21.70*	92.71
pn	21.70*	54.77
$\pi^- p$	13.63	36.02
$\pi^+ p$	13.63	27.56
$K^- p$	11.82	26.36
$K^+ p$	11.82	8.15
γp	0.0677	0.129

*Requiring the same pomeron exchange coefficient as for $\sigma(pp)$ and $\sigma(\overline{p}p)$. Fits without the constraint result in an almost identical value, $X = 22.15$ mb.