INTEGRAL AND DERIVATIVE DISPERSION RELATIONS IN THE ANALYSIS OF THE DATA ON pp AND $\bar{\text{p}}$p FORWARD SCATTERING

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S u m m a r y

Integral and derivative dispersion relations (DR) are considered for the pp and $\bar{\text{p}}$p forward scattering amplitudes. A new representation for the derivative DR, valid at lower energies than the standard one, is obtained. The data on the total cross sections of pp($\bar{\text{p}}$p) interaction as well as those on the ratio of the real part to the imaginary part of the forward amplitude are analyzed within various forms of the DR and high-energy Regge models. It is shown that three models for the pomeron, simple pole with intercept larger than one, triple pole pomeron, and double pole pomeron (both with intercept equal to one) lead to practically equivalent descriptions of the data at $\sqrt{s} > 5$ GeV. It is also shown that the low-energy part of the dispersion integral (from the two-proton threshold up to $\sqrt{s} = 5$ GeV) allows one to reproduce well the data on ρ at lower energies without additional free parameters.