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AN EXPERIMENTAL FIT OF PARAMETERS IN A DOUBLE REGGE POLE EXCHANGE MODEL.

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The Scandinavian Bubble Chamber Collaboration have within this program to investigate high energy p-p - reactions measured a total of 30000 proton-proton reactions at 19 GeV/c incoming momentum and with four charged particles in the final state. In the reaction channel were no neutral particle is produced

$$pp \to pp\pi^+\pi^-p \qquad (1)$$

the production of $\Delta^{++}(1236)$ is abundant and the reaction

$$pp \to \Delta^{++}\pi^-p \qquad (2)$$

has a large cross section, 0.8 mb, which is more than 50 % of the channel cross section (1).

This reaction (2) lends itself to description in the language of Regge Pole exchange models. One such model is proposed by N.F. Bali, G.F. Chew and A. Pignotti, who give the following formula for the cross section.

$$d^5\sigma = F(t_1, \omega, t_2, s)\, x^{2\alpha(t_1)}\, y^{2\beta(t_2)} dt_1, dt_2\, d\omega\, dx\, dy\, \delta[f(x,y)]$$

where t_1, t_2, ω, x, y is a complete set of kinematical variables proposed by M. Toller.

An interesting question is: which are the parameters in the assumed linear Regge trajectories $\alpha(t_1)=\alpha_0 + \alpha^1 t_1$ and $\beta(t_2) = \beta_0 + \beta^1 t_2$ which best describe the experimental data. This is somewhat complicated to answere since the form and parameters in $F(t_1,t_2,\omega, s)$ (containing the vertex factors) are very vaguely known. The paper describes a maximum Likelyhood method for finding the parameters in $\alpha(t_1)$ and $\beta(t_2)$ without requiring any knowledge of $F(t_1, t_2, \omega, s)$. Results from the application of the method to the process $pp \to \Delta^{++}\pi^-p$ at 19 GeV/c are also given.