Z. Physik C, Particles and Fields 4, 333–344 (1980)

Zeitschrift für Physik C Particles and Fields

Zero Trajectories of Invariant πN Amplitudes. I

E. Borie*, W. Gampp, G. Höhler, R. Koch*, and I. Sabba Stefanescu**
Institut für Theoretische Kernphysik der Universität, D-7500 Karlsruhe, Federal Republic of Germany

Received 23 January 1980

Abstract. Zero trajectories of invariant πN amplitudes have been calculated from the results of the recent phase shift analyses of the Karlsruhe-Helsinki and CMU–LBL groups. It is remarkable that the zero patterns of all invariant amplitudes A, B (for elastic $\pi^{\pm}p$ scattering and also for the isospin even and odd combinations) are similar to each other. This is unexpected from dual models, in particular since B^{+} contains the effects of diffraction. There are qualitative discrepancies with the zero pattern of Odorico's Linear Zero Model. The good agreement between the results derived from the two phase shift analyses indicates that the ambiguities have been resolved in the same way. The continuation of the trajectories to unphysical regions and several applications will be treated in the second part of this paper.