NEW PARAMETERIZATION OF THE RESONANT PRODUCTION AMPLITUDES NEAR AN INELASTIC THRESHOLD

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New formulae for the resonant scattering and the production amplitudes near an inelastic threshold are derived. It is shown that the Flatté formula, frequently used in the experimental analyses, is not sufficiently accurate. Its application can lead to a substantial distortion of the effective mass spectra and the resonance pole positions.

A unitary parameterization, satisfying a generalized Watson theorem for the production amplitudes, is proposed. Using it, one can, for example, study properties of the meson-meson interactions and, in particular, the scalar resonances $a_0(980)$ and $f_0(980)$.

The new formulae can be applied in numerous analyses of present and future experiments (for example Belle, BaBar, CLEO, BES, KLOE, COSY, Tevatron, LHCb, JLab, PANDA ...) and also to reanalyse older experiments in order to deepen our information about the meson spectroscopy and the reaction mechanisms.

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