

Resonances in the isovector P wave of $\pi\pi$ scattering

P. Bydžovský^(a), Yu.S. Surovtsev^(b), R. Kamiński^(c), M. Nagy^(d)

^(a) Nuclear Physics Institute, ASCR, Řež, Czech Republic

^(b) Bogoliubov Lab of Theoretical Physics, JINR, Dubna, Russia

^(c) Institute of Nuclear Physics, PAS, Crakow, Poland

^(d) Institute of Physics, SAS, Bratislava, Slovak Republic

Parameters of ρ -like resonances are obtained in the multichannel analysis of the $\pi\pi$ -scattering data below 1.9 GeV. The work is an extension of our previous 2-channel “model-independent” analysis of the data [1,2] (based on analyticity and unitarity) assuming the 3rd effective channel. After formalism of the used method is briefly mentioned new results [3] are compared with previous results and discussed. A possible classification of the resonance states is also discussed.

In the 3-channel analysis, we confirmed the existence of the $\rho(1250)$ meson and showed that the simultaneous existence of the $\rho(1450)$ and $\rho(1250)$ mesons does not contradict the data. The analysis indicates an importance of presence of some effective channel with the threshold at 1512 MeV, which might be interpreted as the $\rho\sigma$ channel.

[1] Yu.S. Surovtsev and P. Bydžovský: Nucl. Phys. A **807** (2008) 145.

[2] Yu.S. Surovtsev, P. Bydžovský, R. Kamiński, M. Nagy: Int. J. Mod. Phys. A **24** (2009) 586.

[3] Yu.S. Surovtsev, P. Bydžovský, R. Kamiński, and M. Nagy: Phys. Rev. D **81** (2010) 016001.

E-mail:

bydz@ujf.cas.cz