

# Further evidence for the lower-lying vector meson $\rho(1250)$ in the $e^+e^- \rightarrow \omega\pi^0$ process

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We examine whether an isovector vector meson with a mass around 1.26 GeV or  $\rho(1250)$  is seen in the  $e^+e^- \rightarrow \omega\pi^0$  process, whose existence was recently reinforced with a multichannel and fully unitary S-matrix analysis of elastic  $\pi\pi$  scattering data with crossing-symmetry constraints by Hammoud *et al.* [1]. The combined cross section data of that process measured by SND [2], CMD-2 [3], and BABAR [4] are analyzed in the energy region from threshold to 2 GeV by using the vector meson dominance model. It is found with the method of least squares that the cross section line shape is described well by the coherent sum of five resonant amplitudes of the  $\rho(770)$  and four higher-mass  $\rho$ -like vector mesons,  $\rho^{(1)}$ ,  $\rho^{(2)}$ ,  $\rho^{(3)}$ , and  $\rho^{(4)}$ , around 1.3 GeV, 1.5 GeV, 1.6 GeV, and 1.8 GeV, respectively, together with a nonresonant amplitude for the direct production process. These four resonances correspond to those which were found between 1 and 2 GeV by Hammoud *et al.* [1]. Then, since the fitted mass and width of the  $\rho^{(1)}$  resonance are similar to their obtained values, it would be associated with the  $\rho(1250)$ , which seems to offer further evidence that it really exists.

## References

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