High Energy Physics - Phenomenology

The omega rho pi coupling in the VMD model revisited

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We determine the value of the \omega -\rho- \pi mesons coupling (g_{\omega\rho\pi}), in the context of the vector meson dominance model, from radiative decays, the \omega \rightarrow 3\pi decay width and the e^+e^- \rightarrow 3\pi cross section. For the last two observables we consider the effect of either a heavier resonance (\rho'(1450)) or a contact term. A weighted average of the results from the set of observables yields g_{\omega\rho\pi} =14.7 \pm 0.1 GeV^{-1} in absence of those contributions, and g_{\omega\rho\pi} =11.9 \pm 0.2 GeV^{-1} or g_{\omega\rho\pi} =11.7 \pm 0.1 GeV^{-1} when including the \rho' or contact term respectively. The inclusion of these additional terms makes the estimates from the different observables to lay in a more reduced range. Improved measurements of these observables and the \rho'(1450) meson parameters are needed to give a definite answer on the pertinence of the inclusion of this last one in the considered processes.

Comments:	14 pages, 5 figures. Extended analysis including SND and CMD2 data. References added. Matches published version
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