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Pion form factor and reactions $e^+e^- \to \omega\pi^0$ and $e^+e^- \to \pi^+\pi^-\pi^+\pi^-$ at energies up to 2 – 3 GeV in the many-channel approach.

Tuesday, 10 September 2013 11:35 (20 minutes)

Using the field-theory-inspired expression for the pion electromagnetic form factor F_π, a good description of the data in the range $-10 < s < 1$ GeV^2 is obtained upon taking into account the pseudoscalar-pseudoscalar (PP) loops. When the vector-pseudoscalar (VP) and the axial vector-pseudoscalar (AP) loops are taken into account in addition to the PP ones, a good description of the BABAR data on the reaction $e^+e^- \to \pi^+\pi^-$ is obtained at energies up to 3 GeV. The inclusion of the VP and AP loops demands the treatment of the reactions $e^+e^- \to \omega\pi^0$ and $e^+e^- \to \pi^+\pi^-\pi^+\pi^-$. This task is also made, with the SND data on the $\omega\pi^0$ production and the BABAR data on the $\pi^+\pi^-\pi^+\pi^-$ production, both in e^+e^- annihilation, upon taking into account $\rho(770)$ and the heavier $\rho(1450)$, $\rho(1700)$, $\rho(2100)$ resonances. The problems with inclusion of the VP and AP loops are pointed out and discussed.

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