

High Energy Physics - Phenomenology

No indication of $f_0(1370)$ in $\pi\pi$ phase shift analyses

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The scalar meson $f_0(1370)$ - indicated in particular in the low energy $p\bar{p}$ to 3 body reactions - is a crucial element in certain schemes of the scalar meson spectroscopy including glueballs. The most definitive results can be obtained from elastic and inelastic $\pi\pi$ phase shift analyses using the constraints from unitarity where the discrete ambiguities can be identified and resolved. We reconsider the phase shift analyses for $\pi^+\pi^- \rightarrow \pi^+\pi^-$, $\pi^0\pi^0$, $K\bar{K}$, $\eta\eta$. While a clear resonance signal for $f_0(1500)$ in the resp. Argand diagrams is seen in all channels above a large "background" from $f_0(600)$ there is no clear signal of a second resonance " $f_0(1370)$ " in this mass range in any reaction, at the level of $\sim 10\%$ branching ratio into $\pi\pi$.

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