

Companion poles in light and heavy mesonic sectors

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A standard quark-antiquark state gets dressed by meson-meson clouds corresponding to its decay product and its pole moves down in the complex plane. If some conditions are met (coupling constant strong enough nearby energy threshold(s)), additional, so-called companion poles may emerge, which correspond to a type of dynamically generated states. For instance, the light scalar states $K_0^*(800)$ and $a_0(980)$ can be interpreted as a companion poles of the predominantly standard quark-antiquark state $K_0^*(1430)$ and $a_0(1450)$. In the charmonium sector, the predominately charm-anticharm resonance $\psi(3770)$ is also described by two poles, a standard quark-antiquark pole and a companion one, the latter being responsible for the peculiar form of the left part of its spectral function. In the future, the mechanism of companion poles can be tested on other yet unexplained X and Y resonances.

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