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Axial-vector meson $a_1(1260)$ as a quasi-bound state of the $K\bar{K}^*$

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In the present talk, we will show how the axial-vector meson $a_1(1260)$ emerges as a quasi-bound state consisting of the kaon and anti vector kaon or a hadronic molecular state. We first construct a dynamical model for $\pi\rho$ scattering based on the fully off-mass-shell coupled-channel formalism. The model includes both the $\pi\rho$ and $K\bar{K}^*$ channel. The axial-vector meson $a_1(1260)$ resonance is generated dynamically below the $K\bar{K}^*$ threshold without any explicit a_1 resonance included. It reveals a certain similarity to the case of scalar meson $f_0(980)$, which is well known as the molecular state of the $K\bar{K}$. This implies that the $a_1(1260)$ resonance can be theoretically interpreted as $K\bar{K}^*$ molecular state or quasi-bound state. We compare the present result to the experimental data on the charge-exchange reaction and finds that it is in good agreement with the mass spectrum corresponding to $a_1(1260)$.

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