



## Pion transition form-factor in the frameworks of the PNJL model and the quark model with separable interaction

The study of the pion photodecay plays an important role in particle physics. The practical interest is explained by the fact that the neutral pion decays electromagnetically in two photons with branching ratio 99%. And a great percentage of photons in the background of heavy ion collision (HIC) is a result of  $\pi^0$  and  $\eta$  decays. The decay width can be considered in terms of the transition form factor (TFF) which encodes the effect of strong interaction of decaying mesons. We consider the pion photodecay and TFF in the frame of two models: we analyze the photon-pion transition form factor in the framework of Polyakov-loop extended NJL and use the quark model with separable interaction kernel.

To describe mesons in second model, we start from the Bethe-Salpeter equation choosing the interaction kernel as  $D(q-p) = D_0 \varphi(q^2) \varphi(p^2)$  and define the meson vertex function in Gaussian form  $\varphi(q^2) = e^{-q^2/\Lambda_H^2}$ . To describe the meson properties we fix the model parameters using the meson electromagnetic, leptonic decay constants. In the frame of this model we considered the  $\gamma^* \pi^0 \rightarrow \gamma$  transition formfactors and extended the work by calculating  $\eta_c$  and  $\eta_b$  transition formfactors.

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