

# PARTICLEFACE 2021: Unraveling New Physics Workshop & Management Committee Meeting



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## The pion-photon transition form factor at two loops in QCD

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Hard exclusive processes play a prominent role in exploring the strong interaction dynamics of hadronic reactions in the framework of QCD. In this context, the pion-photon transition form factor  $\gamma\gamma^* \rightarrow \pi^0$  at large momentum transfer serves as one of the simplest exclusive processes for testing the theoretical predictions based upon perturbative QCD factorization.

Whereas the one-loop perturbative and certain power-suppressed contributions are already known and turn out to be important in view of precise experimental measurements and the scaling violation implied by the BaBar data, the two-loop correction at leading power remained unknown until recently.

Here we report on the two-loop calculation of the pion-photon transition form factor from the process  $\gamma\gamma^* \rightarrow \pi^0$  at leading power. Besides discussing the applied multi-loop techniques, we put emphasis on the infrared subtraction and the role of evanescent operators, and present some numerical results.

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