

Measurement of Transition Form Factors at BESIII

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The two-photon physics program of the BESIII Collaboration is mainly motivated by the large uncertainty of the contribution of hadronic light-by-light scattering (hLBL) to the Standard Model calculations of the anomalous magnetic moment of the muon a_μ . Here, electromagnetic transition form factors (TFF) can serve as experimental input to improve the calculations. Data acquired with the BESIII detector at center of mass energies from 3.77 to 4.6 GeV allow one to study the momentum dependence of TFFs of light mesons. The measurements are performed with a single-tag technique and indicate an unprecedented accuracy at momentum transfers below 3 GeV^2 , the region of highest importance for the calculations of a_μ . In addition to the single pseudoscalar mesons π^0 , η and η' , the $\pi\pi$ system is studied. The information is not only vital as input to the recently developed dispersive approaches to the hLBL calculations, but allows one to investigate TFFs of scalar and tensor resonances, and can provide further insights on the pion polarizabilities, as well as pion rescattering effects. Making use of the large statistics collected at BESIII, a first double-tagged measurement of the pion transition form factor has been started. It is the first step towards a model independent parameterization of the TFF of the π^0 . In this presentation the current status of the program will be discussed.

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