Discussion: Transition Form Factors

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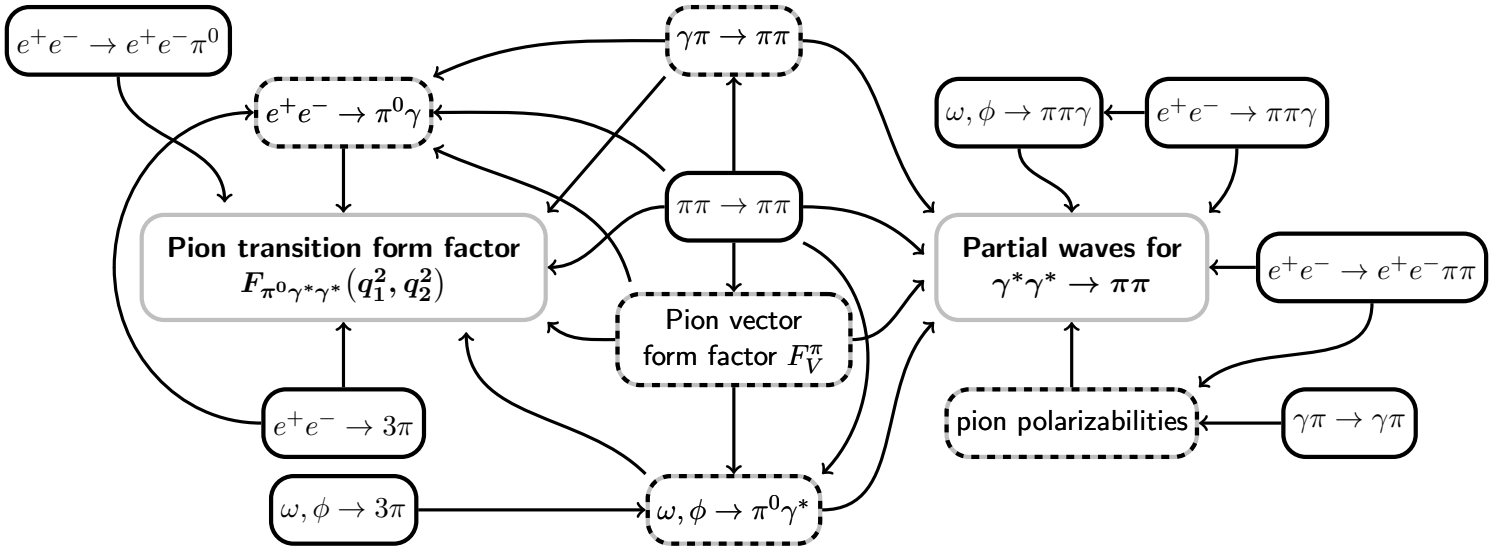
General

Why are transition form factors important?

1. Form factors are traditional to be considered in theory
   (Vector dominance, Chiral Lagrangians, pQCD)
2. Information on $P\gamma^{(*)}\gamma^{(*)}$ form factors is important
   for the hadronic light-by-light contribution,
   new dispersive approach by G. Colangelo et al., JHEP 09 (2014) 091
3. All calculations predict that
   the largest contribution to $a_\mu^{\rm LBL}$ comes from
   the pseudoscalars ($\pi^0,\ \eta,\ \eta'$)

Transition Form Factors and Hadronic LbL



Measurements of various processes are in order

For hadronic vacuum polarization (HVP) all cross sections are integrated with the same kernel

TFF: What and How to Measure?

- In HVP case there are clear priorities:
  measure $e^+e^- \to \pi^+\pi^-$ below 1 GeV,
  measure multihadronic σ's below 2 GeV
- Different σ's demand different integrals
- Experiment needs clear directions:
  q^2 ranges of interest, what precision, ...