

Discussion on the experimental input to the HVP dispersion relation (1)

MD 2022-09-06

Further questions for speakers specific to their talks

Ongoing analyses

- BABAR ISR multihadronic essentially complete set of exclusive cross sections up to > 2 GeV
 $\pi^+\pi^-/K^+K^-/\mu^+\mu^-$ independent/2009 stat x7 goal $<0.5\%$ precision/detailed syst $\rightarrow 2023$
- BELLE II ISR exp conditions similar to BABAR, large statistics in the long run
improvement of systematics challenging, requiring large investment
- BES III ISR new $\pi^+\pi^-$ analysis underway with more statistics, goal syst uncertainty $0.9\% \rightarrow 0.5\%$
other exclusive measurements to come, R measurements 2-5 GeV important
- CMD-3 many contributions on multihadronic cross sections
 $\pi^+\pi^-$ final results eagerly waited...
- SND $\pi^+\pi^-$ published, continuing study of multihadronic processes

Discussion on the experimental input to the HVP dispersion relation (2)

MD 2022-09-06

Issues/requirements

- Careful and detailed evaluation of systematic uncertainties/correlations/uncertainties on uncertainties
- Full documentation/cross checks
- Radiative corrections: what is measured/additional photons ISR and FSR (so far only BABAR)
reliance on MC generators (Phokhara for ISR)/tests of generator/FSR from pions
Phokhara limited to NLO
- Luminosity for ISR measurements: Bhabhas + MC generator (ISR radiator)/ratio to $\mu^+\mu^-$
- At this stage, given some existing discrepancies (BABAR/KLOE for $\pi^+\pi^-$, BABAR/CMD-3/SND for K^+K^-) and the dispersive/lattice problem, absolute necessity to design blinded analyses