Chap. 18: QED and initial state radiation studies

Session editors: Galina Pakhlova (Belle), Fabio Anulli (BaBar)

Chapter outline:

18.1 Introduction

Section writers: F.Anulli, E.Solodov

18.2 Exclusive hadronic cross-sections

Section writers: F.Anulli, E.Solodov, M.Davier

18.2.1 Measurement of $\pi^+\pi^-(\gamma)$

to be written by BABAR: M.Davier

18.2.2 Hadronic contribution to $(g-2)_\mu$

to be written by BABAR: M.Davier

18.2.3 Light mesons spectroscopy

Section writers: F.anulli, E.Solodov

18.2.4 Measurement of time-like baryons form factors

Section writers: R.Baldini, S.Pacetti, F.Anulli

18.3 Open charm production

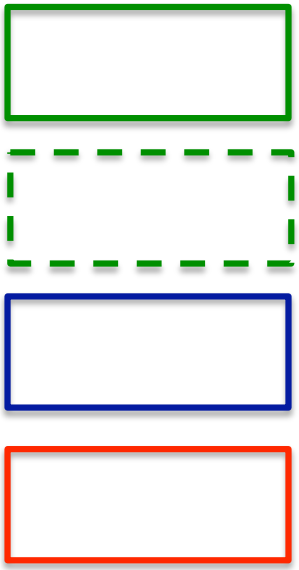
Section writers: A.Palano (BaBar) and G.Pakhlova (Belle)

18.4 Search for exotic charmonium

Section writers:S.Ye (BaBar) and Y.ChangZheng (Belle)

18.5 Search for multilepton final states

Section writers: M.Graham and B. Echenard (Babar)



first draft written for a large part

Belle contribution written
BaBar contrib. missing

contribution provided, needs adjustment

missing contribution

- Some section fully (or partly) written.
- Some subsection missing.
- Nothing has been reviewed yet
- Overall is quite in control, and should be hopefully in a readable shape by September

ISR chapter: sections details

- 18.1 Introduction
  - ISR method
    - a bit theory
    - experimetnal issues:

    - comparison with direct e+e- experiments

    - tagging vs untagging

    - ……

Aim of this introduction was to give :
- an idea of why it is still important to measure e+e- annihilation at low energies
-the basics of the ISR technique, which was developed at B (and phi) factories
- the different technique used for LQ and HQ hadrons

Basically fully written.

Some figure that needs to be produced.

Several details to be discussed with Genia Solodov.

ISR chapter: sections details

- 18.2 Exclusive cross sections
  - common analysis strategy
  - p+pi- and contribution to g-2
    - other contributions to g-2
    - discussion on g-2 (e+e- and tau)
  - Light meson spectroscopy
    - results on rho,w,phi excitations
    - the Y(2175)
    - results on J/psi and psi(2S)
  - Baryon Form Factors

This section refers only to Babar results (with exception of the Y(2175))

- several subsections still missing
- in particular the pipi channel with the discussion on g-2
  - should take care also of the g-2 calculation based on tau results

ISR chapter: sections details

- 18.3 ISR to open charm
  - Introduction
  - $D^{(*)+}D^{(*)-}$
  - $D^0D^-\pi^+$
  - $D^0D^{*-}\pi^+$
  - $\Lambda_c^+\Lambda_c^-$
  - $D_S^{(*)+}D_S^{(*)-}$
  - Discussion and perspectives

- Most of channels studied by both Belle and BaBar
- We have started to discuss how to make a common description of results from both experiments

- Inter-correlation with Charmonium chapters not yet exploited
- No other major issues foreseen

ISR chapter: sections details

- 18.4 Search for exotic charmonium => Y family
  - Introduction
  - Y family in ISTR $J/\psi\ \pi^+\pi^-$
  - Y family in ISTR $\psi(2S)\ \pi^+\pi^-$

- Most of channels studied by both Belle and BaBar
- Shuwei Ye wrote the entire subsection, including results from both experiments
- Well written, but it includes also a long section on interpretation of the results.

==> we should revise and reorganize it, in order to move the interpretation of results into the exotic charmonium chapter

- 18.5 Search for multi-lepton final states
  - Short introduction on DF
  - search for 4 lepton final state

- One analysis ongoing in BaBar
- Question: Do we really want this section in this chapter?
  - or does it fit better in the Physics Beyond SM section 15.3.6?

Summary ISR chapter

- Writing has started for most sections
- Hope to get also a first draft on the missing parts soon
- Co-editors have been in touch more or less regularly
  - worked indipendently up to now, we have started to discuss common issues, and make plans on how to proceeds
- A first complete draft of the whole chapter possibly ready by end of September
- An important issue could be the length
  - new estimate is about 40 pages
  - OK… will work on that….

Chap. 21.1: QCD and related physics: Fragmentation Functions

Editors:
Fabio Anulli (BABAR)
Ralf Seidl (Belle)
Shunzo Kumano (theory)

Section outline:

- Theory introduction
- Unpolarized FF
  - Light hadrons
  - Charmed hadrons
- Polarized FF
  - Collins asymmetries
  - Interference asymmetries

- Up to now, Ralf Seidl took care of writing the section on polarized FF, and on unpolarized FF for Heavy quark hadrons.
- Babar contribution on Light hadrons is subject to publication of ongoing analyses (writer: Dave Muller)
- Limited inter-correlation with charmed baryons, and Baryonic B decays sections