

3rd Physics of the B factory Workshop

Tau Sections

Hisaki Hayashii
Nara, Japan

Conveners:

Mike Roney, Hisaki Hayashii
A. Pich (Theory)

Contents

- Section Outline (under discussion)
- Status and Plan

Section Outline

My private version

| | page ? | who |
|--|--------|-----|
| ■ Tau Section | | |
| 15.1 Introduction | 2.5 | |
| a History + tau lepton | | |
| b Event Selection, Cross section | | |
| 15.2 Lepton Universality and CPT | 5 | |
| a tau mass | | |
| b tau lifetime | | |
| c leptonic decays | | |
| d π ν , K ν | | |
| 15.3 New Physics Searches | | |
| a Lepton Flavor Violation | 4 | |
| i Introduction | | |
| ii Results | | |
| 1. $\tau \rightarrow l g$ | | |
| 2. $\tau \rightarrow 3l$ | | |
| 3. $\tau \rightarrow l P^0$, 3 hadrons. | | |
| b CP violation | 3 | |
| i CPV in tau pair production (EDM) | | |
| ii CPV in tau decays. ($\tau \rightarrow K \pi \nu$) . | | |

Section Outline

| | page |
|--|----------|
| 15.4 Hadronic Decays | |
| a Theoretical Introduction (A. Pich) | 3 |
| i alphas, V_{us} , m_s , ... | |
| b Measurement of Branching fractions | 4 |
| I General | |
| ii 2π | |
| iii $K\pi$, $K\pi\pi$ | |
| iv $h\bar{h}$ | |
| v $\eta + X$ | |
| vi multi-body | |
| c Measurement of Spectral Functions | 3 |
| i 2π | |
| ii $K\pi$, | |
| iii $3h$ | |
| d R_{τ} | 2 |
| e Extraction of V_{us} | |
| i Introduction | |
| ii Results | |
| f $CVC/(g-2)$ | 2 |
| g 2 nd class currents | 2 |
| I Introduction | |
| ii $\tau \rightarrow \omega \pi \nu$ | |
| iii $\tau \rightarrow \eta \pi \nu$, $\eta' \pi \nu$ | |
| h Hadron mass spectrum, Comparison with Theoretical Models | 1 |
| i 3π , $KK\pi$ (Vector/Axial Vector) | |
| Total | 31 pages |

Status and Plan

- Need to fix the sub-section structure with a discussion with co-editor, Mike Roney.
In particular, the section of hadronic decays is to be discussed.
- Need to start a discussion with subsection writers.
- Just starting a discussion with theorist, A. Pich
- No tex yet, but we are planning to make the frame work of the tau section in coming month or so.
- Recently, there are a lot of activity in the hfag-tau group. All tau data from Belle and Babar, as well as previous CLEO, ALEP results are combined.
Resultant values and figures will be reflected to this book.