

5th Workshop on Physics of the B factory Tau Section

Hisaki Hayashii
Nara, Japan
Nov. 2011, KEK

Conveners:

Mike Roney, Hisaki Hayashii
A. Pich (Theory)

**We have a convener's meeting by phone/skype
once per month.**

Contributors

■ Babar

- ✓ Alberto Lusiani (non-strange BF)
- ✓ George Lafferty(2nd class current)
- ✓ Swagato Banerjee (various)

■ Belle

- ✓ Boris Shwartz(strange BF, Spectral Function)
- ✓ Kiyoshi Hayasaka(LFV)

Current Status

Red: Done > 80%

Green: 50%-- 80 %

Blue: Just started

Preface

17.1 Introduction (M.R.)

- a History + tau lepton, General reference
- b Event Selection, Cross section

17.2 Tau mass and life time (H.H.)

17.2.1 tau mass

17.2.2 tau lifetime

17.3 Test of Lepton Universality (M.R.)

17.3.1 mu-e Charged Current Universality

17.3.2 tau-e Charged Current Universality

17.4 Search for lepton flavor violation in tau decays (M.R.,H.H.,K.H.)

17.4.1 Tau Lepton Data Samples and Search Strategies

17.4.2 Current Results on LFV decays of the Tau

17.4.3 Future Prospects (Add Belle parts + List of refs.)

Section Outline(conti.)

17.5 CP violation in tau lepton System (H.H.)

17.5.1 EDM of the tau lepton

17.5.2 CPV in tau lepton decays :rate asymmetry

17.5.3 CPV in tau lepton decays: angle asymmetry

17.6 Hadronic Tau Decays

17.6.1 Theory (A. P.)

17.6.1.1 Inclusive tau decay width

17.61.2 Determination of α_s

17.61.3 $|V_{us}|$ Determination

17.6.1.4 Spectral Functions

17.6.2 tau Branching Fractions (M.R.,A.L., S.B.)

17.6.3 Measurement of $|V_{us}|$ (M.R.,A.L.,S.B.)

17.6.4 Non-Strange Spectral Functions (H.H.)

17.6.4.1 2π

17.6..4.2 3π

17.6.4.3 $KK\pi$

17.6.4.4 Inclusive Non-strange Spectral Functions

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17.6.5 Strange Spectral Functions (H.H.,B.S.)

17.6.5.1 $K\pi$ (B.S.)

17.6.5.2 $K\pi\pi$

17.6.5.3 $K\eta$ (K.H)

17.6.5.4 Inclusive Strange Spectral Functions

17.6.6 Search for 2nd Class current (M.R.,G.L.)

17.7 Test of CVC and Vacuum Hadronic Polarization Determination (H.H.)

Vus from tau

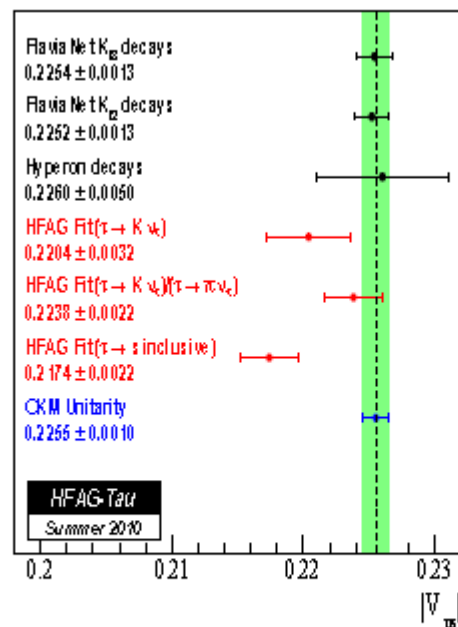


Fig. 18. Measurements of $|V_{us}|$ from kaon, hyperon and tau decays.

Comments/Plans

- So far, 23 pages including references are prepared.
- A nice contribution from theorist, A. Pich .
- 1st check done by the editor (Adrian) ----. Good shape.
- We are updating according his comments and writing the missing parts.
- Final draft will be <40 pages.
- Main missing parts are
 - ✓ Introduction
 - ✓ tau mass, life time
 - ✓ Br's (There are averages in hfag-tau.)
 - ✓ Spectral Functions
 - ✓ 2nd class currents
 - ✓ List of publication
- There is an overlap in the description for $|V_{us}|$ measurement.
- An introductory description is required in several places.
- Unify the notation: tau or τ , avoid just τ in the main text.
- 1st full draft by the end of 2011