

Radiative & Electroweak Penguins

Section editors: Steve Playfer (Edinburgh, BaBar)
Mikihiko Nakao (KEK, Belle)
Tobias Hurth (CERN, Theory)

5th Physics of the B-Factories Workshop
KEK , 21st-22nd November 2011

Section Status (what is in svn)

- Theory (0/4 pages)
- Inclusive $b \rightarrow s \gamma$ (2.5/6 pages)
- Exclusive $b \rightarrow s \gamma$ (2/4 pages)
- Exclusive & inclusive $b \rightarrow d \gamma$ (1/3 pages)
- Time-dependent CP violation in $b \rightarrow s(d) \gamma$ (1.5/3 pages)
- Exclusive & inclusive $b \rightarrow s l^+ l^-$ (2/6 pages)
- Exclusive $b \rightarrow s \nu \bar{\nu}$ (0.5/2 pages)
- Other decays ($\gamma\gamma, \pi l^+ l^-$) ? (0.5/2 pages)

Section Status (what is in svn)

- Significant fraction of text committed (10 pages)
Needs a lot of editing for clarity and pedagogy
No theory section yet (4-5 pages)
- No figures yet. Estimate ~10 of these (2-3 pages)
- No tables yet. Estimate ~ 6 of these (1-1.5 pages)
HFAG results have been included as inline equations.
In most cases would be better as tables.
- It looks like we are heading for 20 pages
(compared to original estimate of 30 pages)

Progress in writing

- Text that has been committed comes from Nakao-san and was committed late last week.
- I have a significant amount of text in a private version. This needs to be merged with the committed text.
- I have a clear space to work on this between now and the end of the year.
but Tables and Figures will take some time...
- Tobias says he was told to wait until the experimental text was available.
I hope this means he has some private text for the theory section that is ready to be added soon.

More experimental results to be included?

BaBar:

- Final lepton-tagged $b \rightarrow s \gamma$ (CP asymmetry, BF & spectral shape) **Unlikely**
- Final sum of exclusives $b \rightarrow s \gamma$ (BF & spectral shape) **Possible**
- Inclusive $b \rightarrow s l^+ l^-$ **Very unlikely**
- Exclusive $b \rightarrow s l^+ l^-$ (rates & asymmetries) **Possible**
- Improved limits on $B \rightarrow K(*) \nu \nu$ **Unlikely**

Belle:

- Inclusive $b \rightarrow s l^+ l^-$ **Preliminary result shown**

CDF & LHCb

- Exclusive $b \rightarrow s l^+ l^-$ (angular analysis) **Preliminary results shown**

Overlaps with other sections

- Interpretation of $b \rightarrow d \gamma$ in terms of V_{td}/V_{ts}
Has its own section (\rightarrow K.Flood)
- Rare & Forbidden decays
Lepton number violating (\rightarrow Kwon/Robertson)
- $B \rightarrow \gamma \gamma$ is unclear. Rare & radiative.
Has been in our section up to now.
Nakao-san wants to include $B_s \rightarrow \gamma \gamma$