Weekend updates

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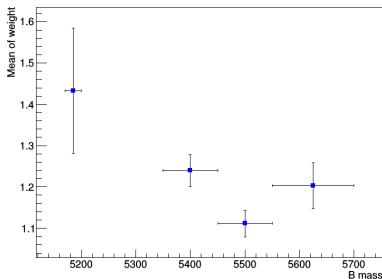[1] University of Zurich

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Weight correlation with B mass

- First thing that come to my mind was the different treatment of background in different methods.
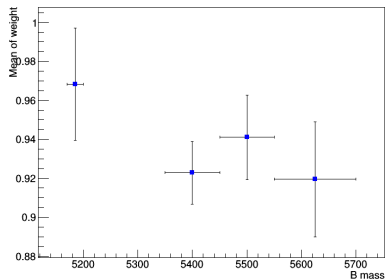- Performed a Pearson correlation check for low and high recoil on data sidebands.

$0.1 \text{ GeV}^2 q^2 < 8 \text{GeV}^2$


$15 \text{ GeV}^2 q^2 < 19 \text{GeV}^2$

- Clear correlation between mass and unfolding weight.
- Impact on the analysis has to be studied.

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First bin problem

- I already mentioned this and no one is worried so this is my final calling to everyone caution.
- All right side band events ($M_B > 5350$MeV) are comming from 2012. There are no background events in 2011 data!
- Optimistic calculation:
    - 21 events in 3 fb^{-1}, 7 events peer fb^{-1}.
    - Probability to expect 7 events and observed 0 is 0.0009 which corresponds to 3.3 σ significance!
    - Taking into account look elsewhere effect(14 bins): $14 \times 0.0009 = 0.0126$, this is like 2.4 σ.
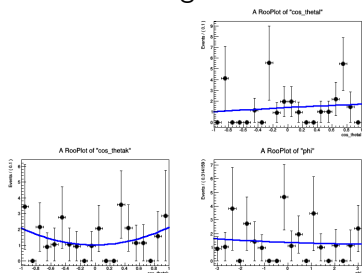

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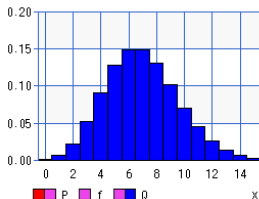
Comparison of Chebyshev fit

- Since I wanted to compare more in detail the difference between left and right sideband I fitted a Chebyshev to them separately.
- All plots: `wget --user=lhcb --password=2924 http://nz17-p1.ifj.edu.pl/work_public/LHCb/Kst_mumu/Bkg_studies/plots.tar.gz`
- Over all I see a tension.

Left: Right:

Background conclusions
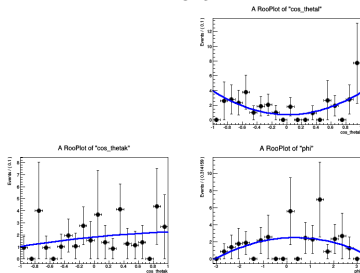
To conclude:

- There are to many hints of something being wrong.
- I know some of you will say:"Statistically insignificant", but if you add them up you are looking at something that is starting to be significant.

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