

$$B^0 \rightarrow K^* \mu^- \mu^+$$

# Finalization



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$B^0 \rightarrow K^* \mu^- \mu^+$  meeting, CERN  
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## Selection Run1

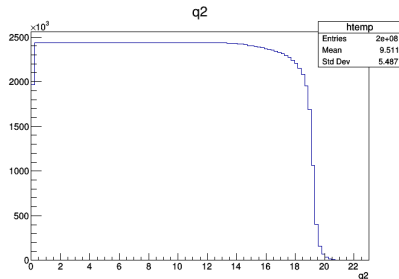
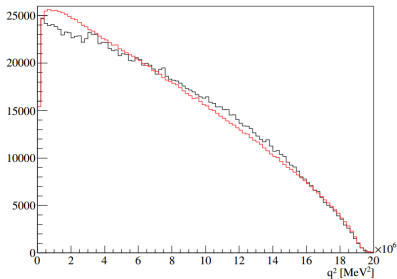
- ⇒ We have independently implemented Run1 selection.
- ⇒ Our implementation agrees between us (independent check).
- ⇒ There is slightly issue when running the same selection on S21:

S20 $N. B_d^0 \rightarrow K^* J/\psi$	442315
S21 $N. B_d^0 \rightarrow K^* J/\psi$	429258
Difference	2.95 %

We think the 3% is fine given that S20 and S21 even having the same cuts have different DDB etc. We saw that these things can cause a difference much much higher in previous rounds.

# The need for MC - improvements

⇒ If you recall in Run1 we had PHSP MC:



⇒ More flat makes our life easier and less dirty in terms of reweighing :)

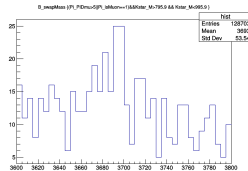
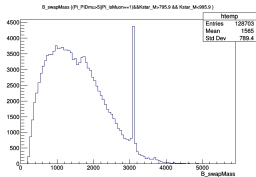
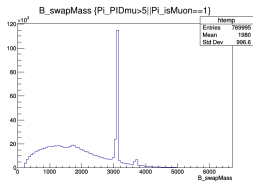
⇒ Produced 20M events so we can get the correction for small "non-flatness". (will give you links at the end).

# Selection

⇒ Normally we have the swap for  $J/\psi$ :

"! $((B0\_swapMass > 3036)$  and  $(B0\_swapMass < 3156)$  and  $(Pi\_PIDmu > 5 || Pi\_isMuon == 1))$  and  $!((B0\_kmuswapMass > 3036)$  and  $(B0\_kmuswapMass < 3156)$  or  $(K\_PIDmu > 5 || K\_isMuon == 1))$ "

⇒ For Run2 we added the same for the  $\psi(2S)$ :



⇒ Impact for the Pwave analysis minimal but let's veto just to be sure :)

# Location

⇒ the ntuples after the selection can be found:  
`/eos/lhcb/wg/RD/Bd2Kstmumu/data_reduced`

