

Comparison of old vs. new data (Bst-ntuples):

old data: 1st 1.35 fb⁻¹ (*red* crosses)

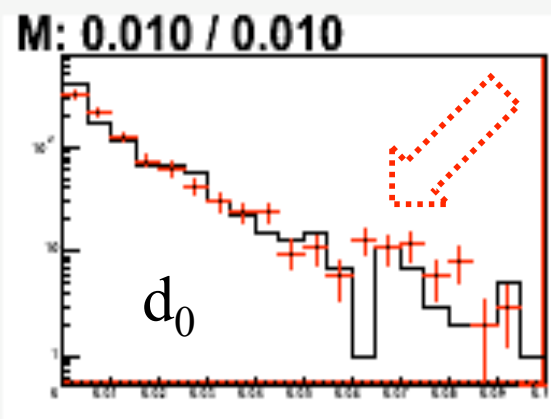
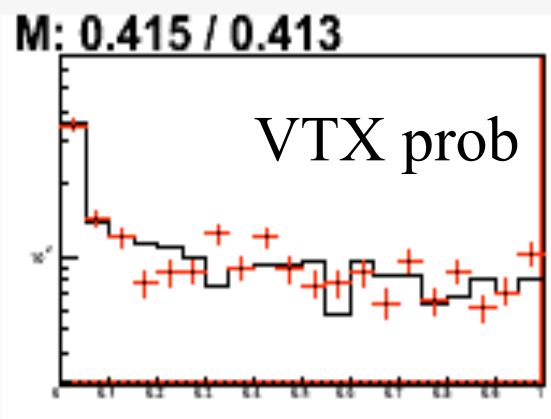
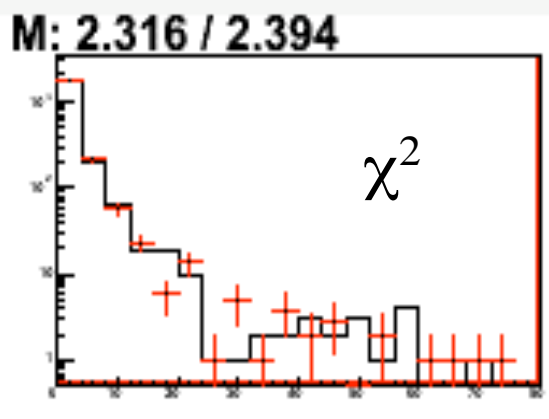
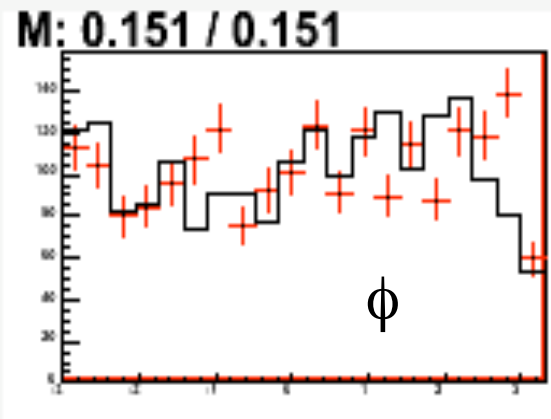
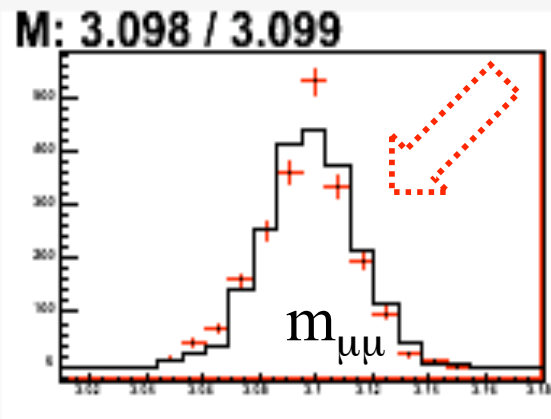
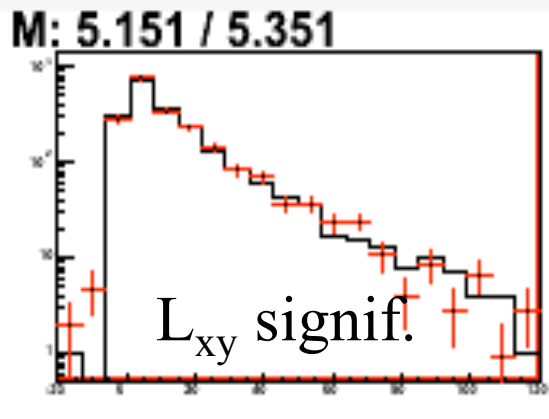
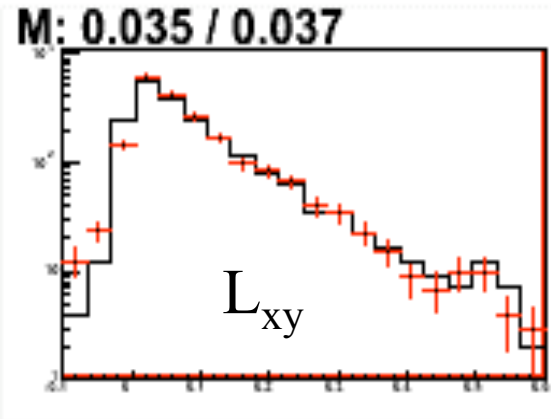
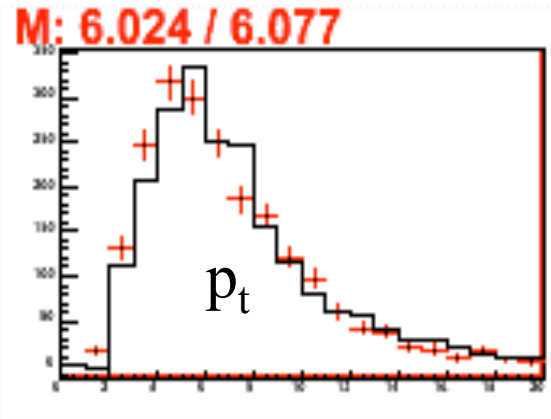
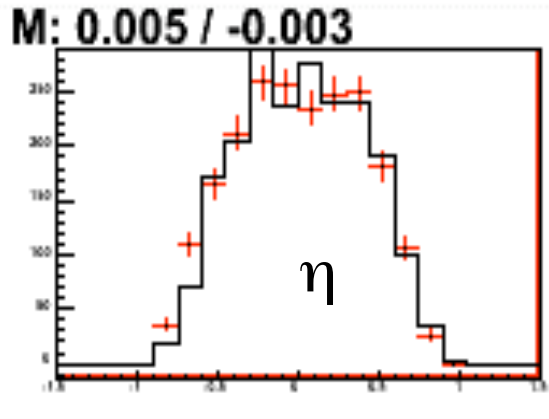
new data: from 1.35 to 2.8 fb⁻¹ (*black* histograms)

B⁰_s -> J/ψφ distributions (except for obvious cases)
are sideband subtracted.

Using a NN-without-PID and a cut of 0.5

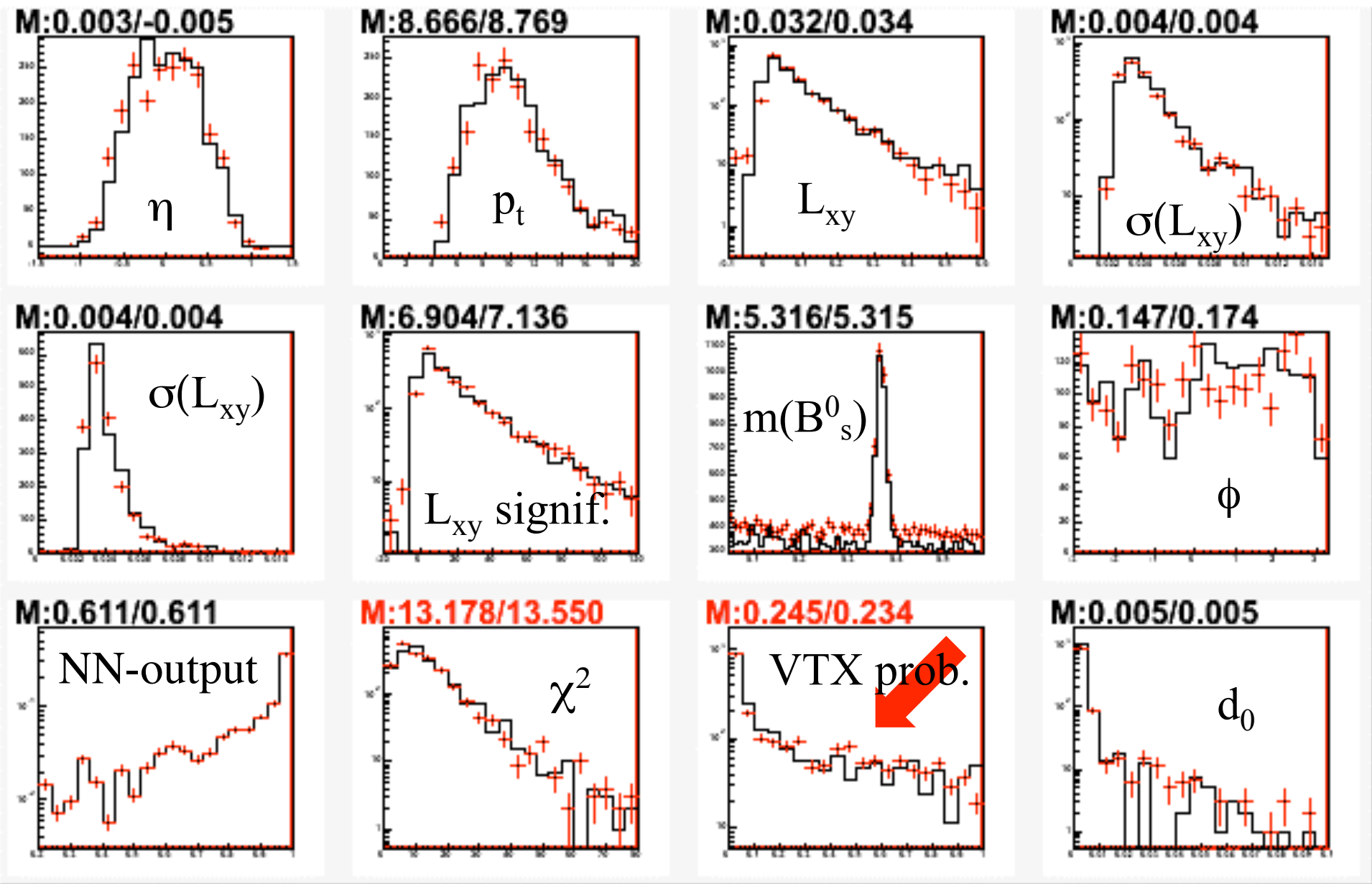
J/ψ

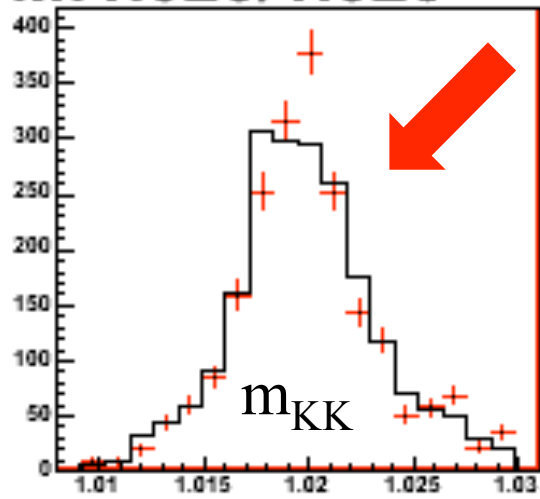
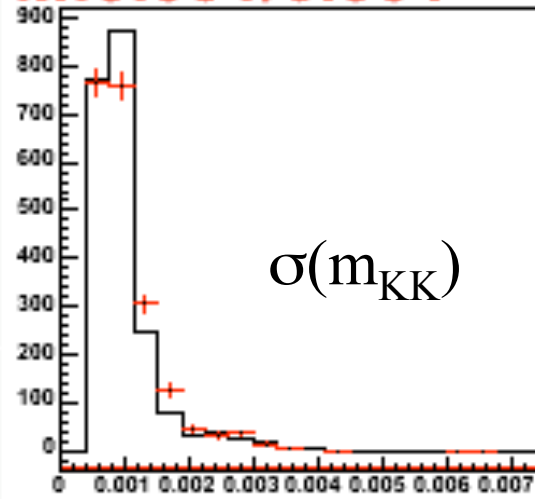
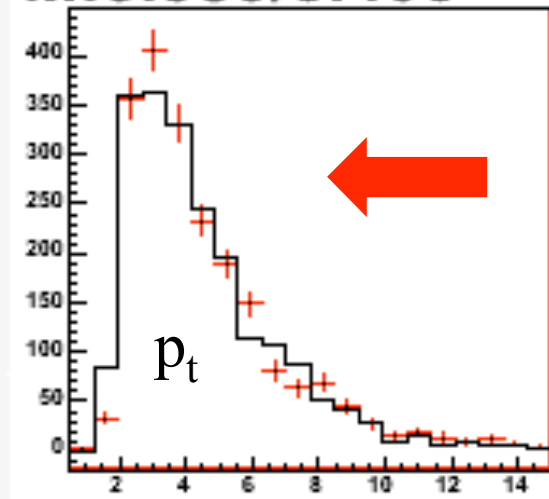
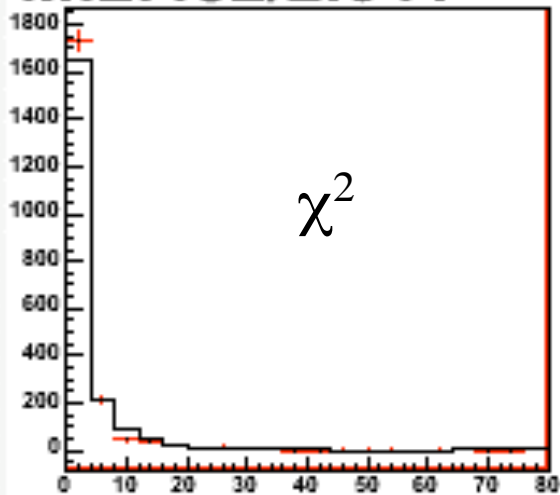
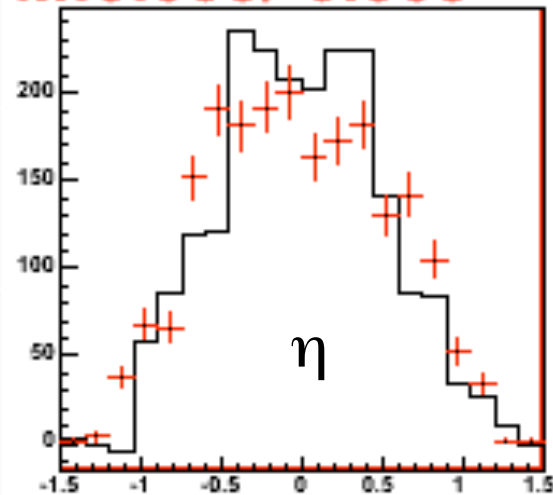
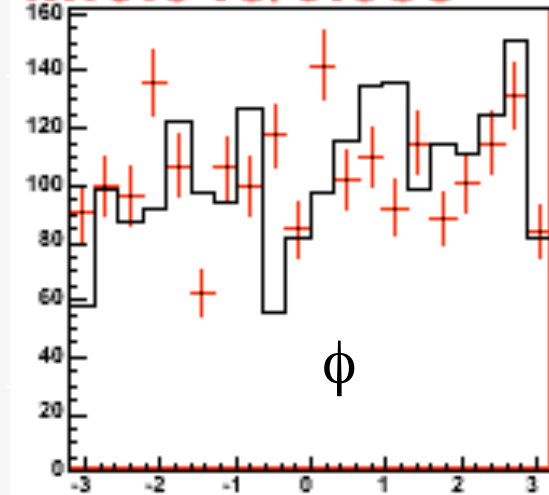
Bst-ntuples, L<1.35 *red*, L>1.35 *black*



B^0_s

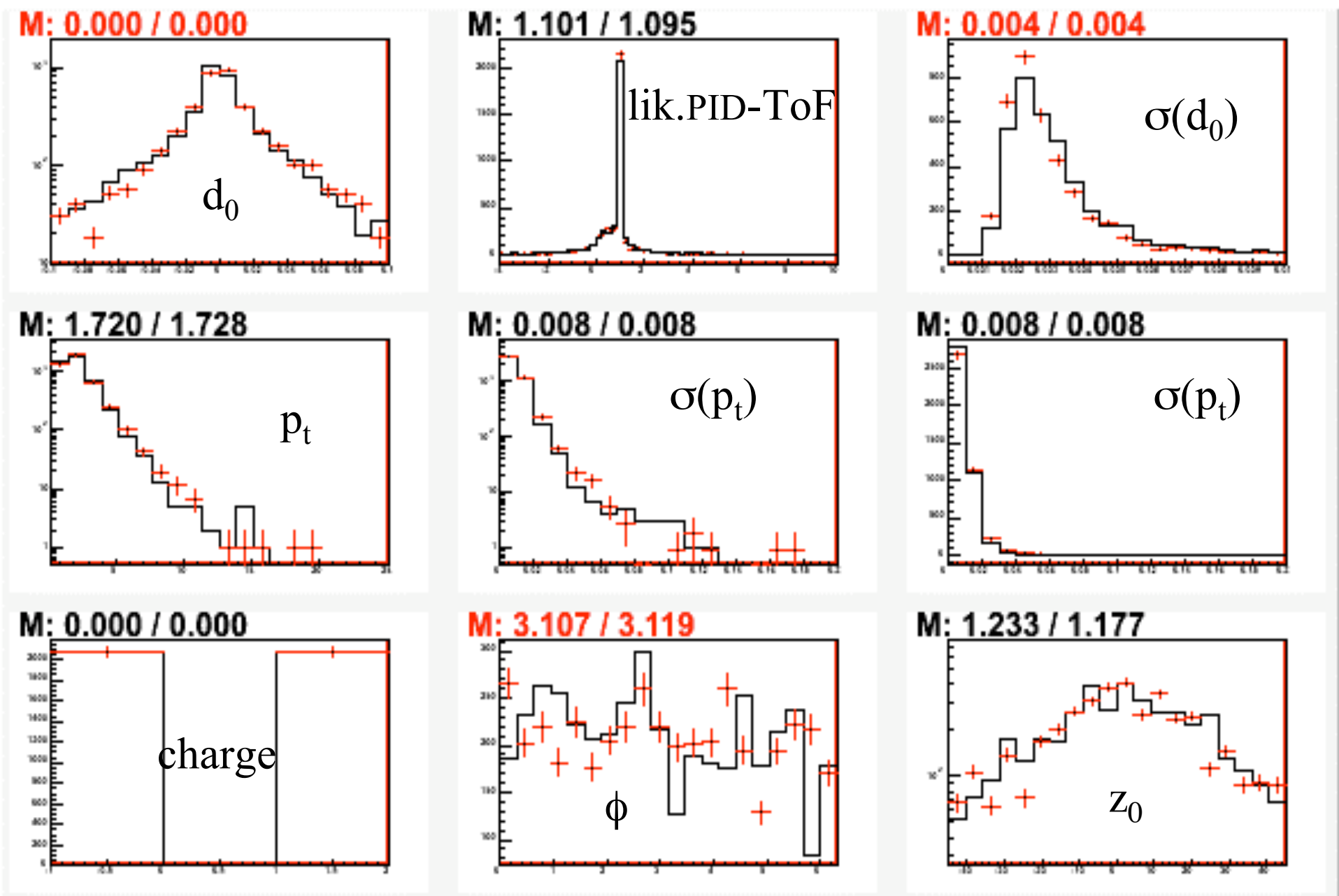
Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*



ϕ Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black***M:1.020/1.020****M:0.001/0.001****M:3.383/3.405****M:2.482/2.641****M:0.003/-0.009****M:0.048/0.088**

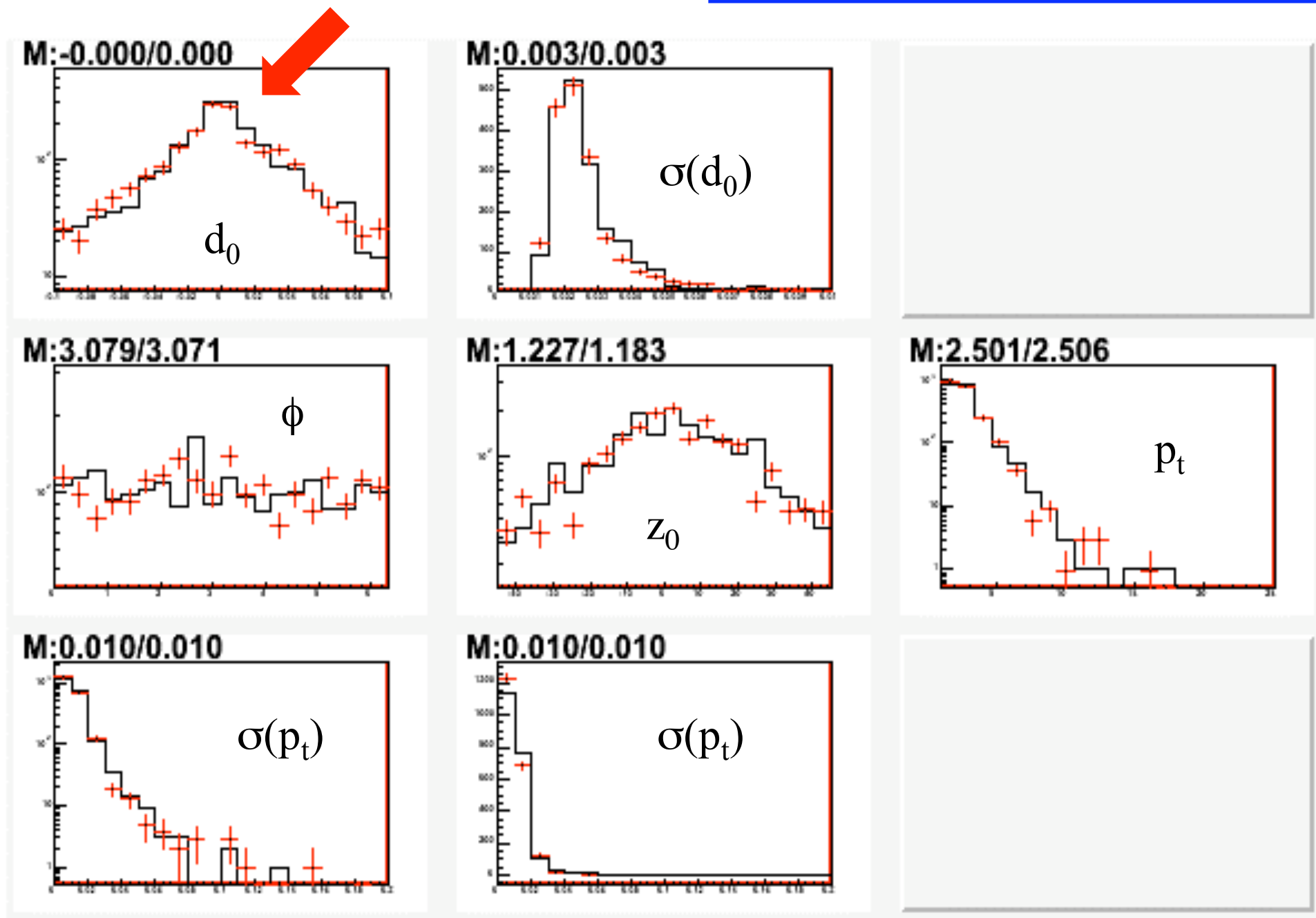
Kaons from ϕ :

Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*



+ive muons from J/ψ :

Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*

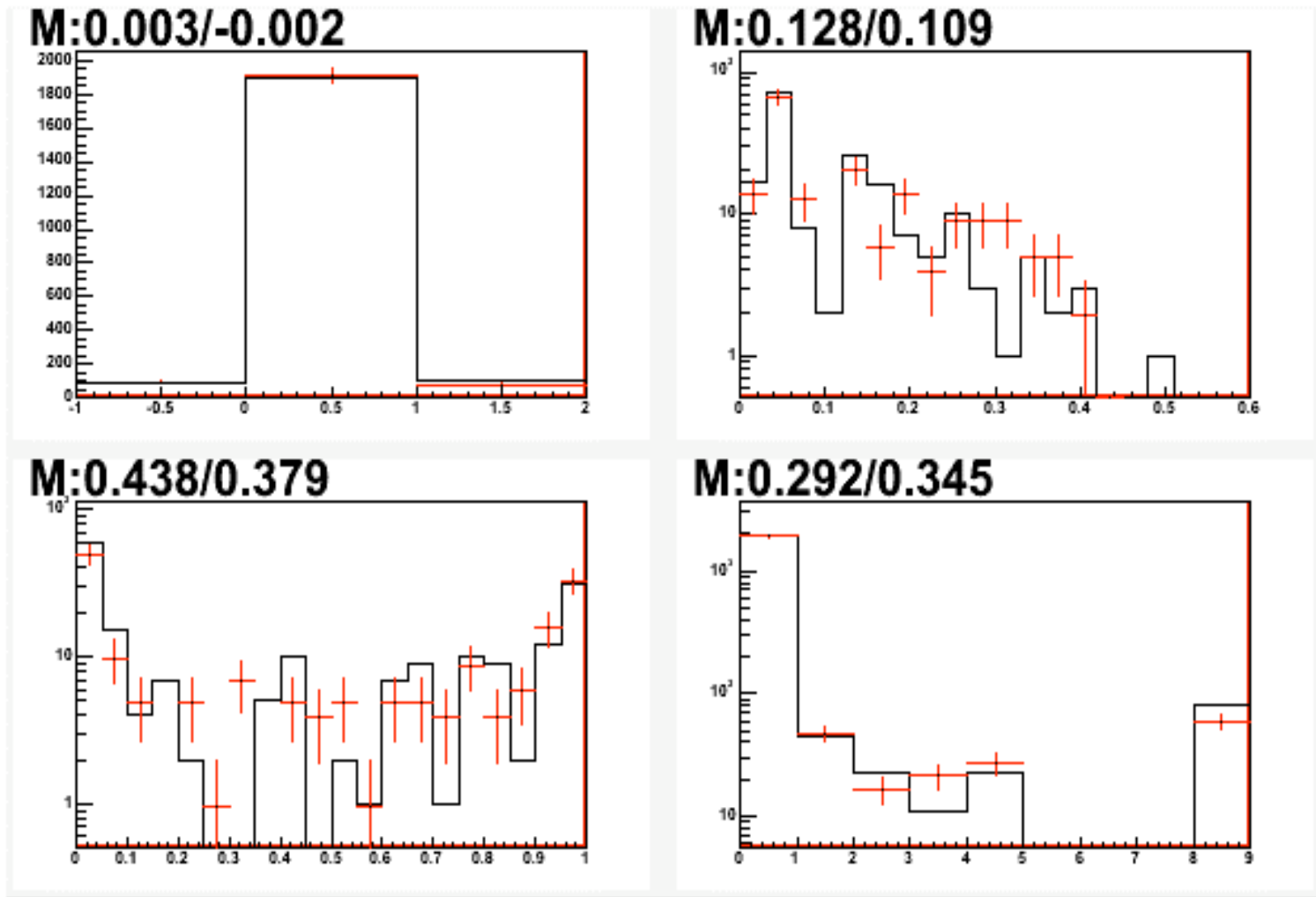


Taggers :

Soft Muon Tagger

Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*

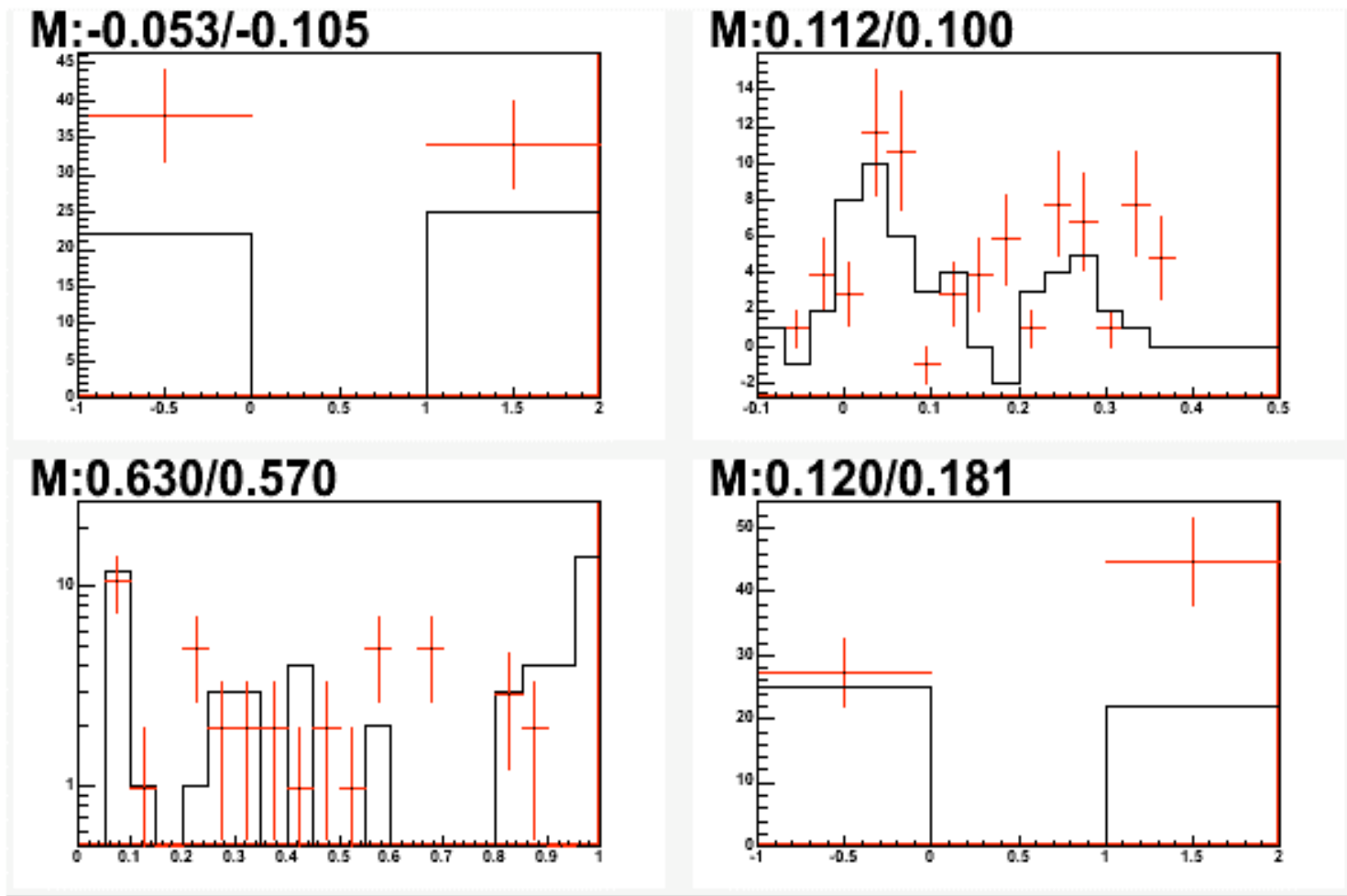
Order of variables: decision , dilution, likelihood, tag type



Soft Electron Tagger

Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*

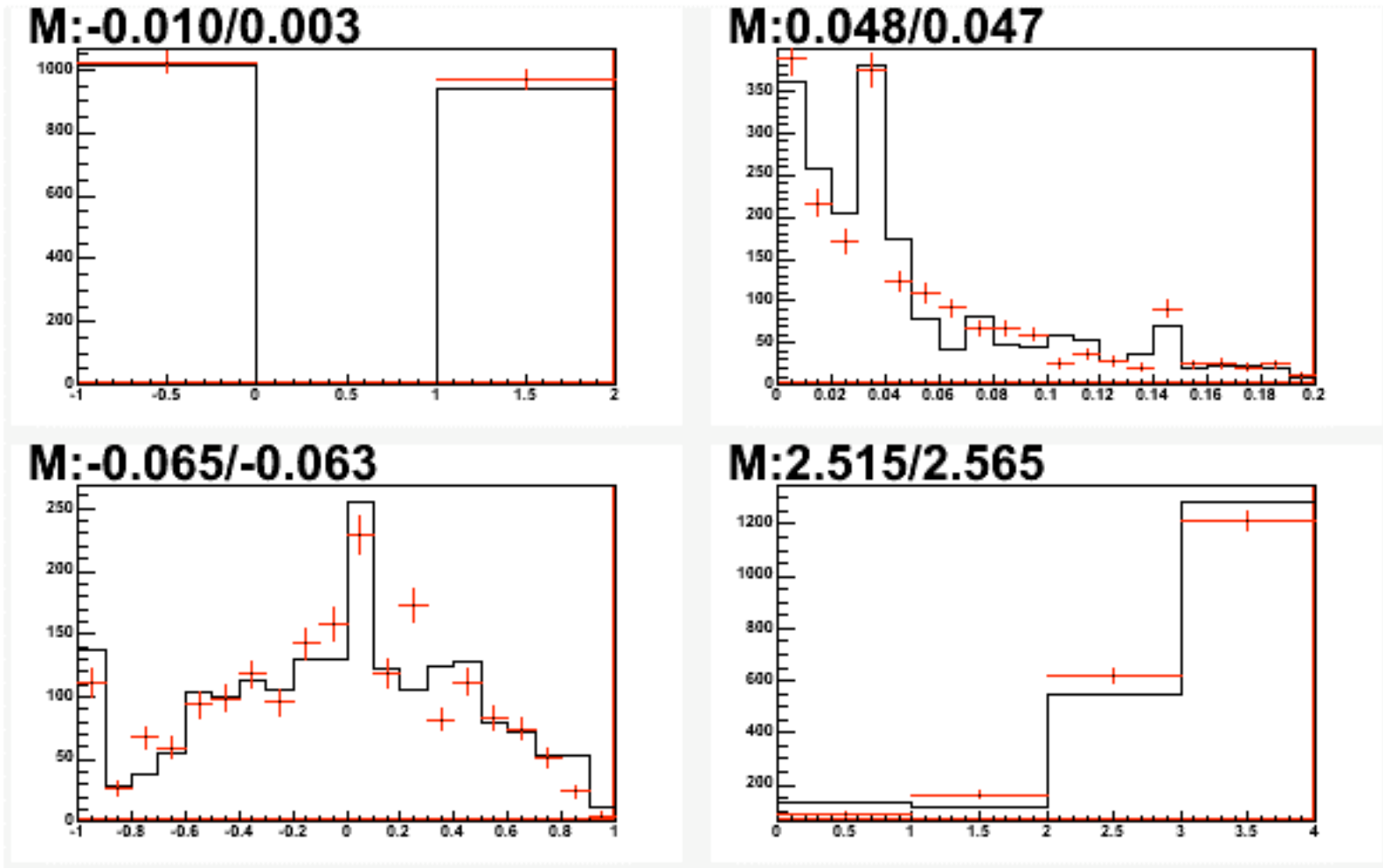
Order of variables: decision , dilution, likelihood, tag type



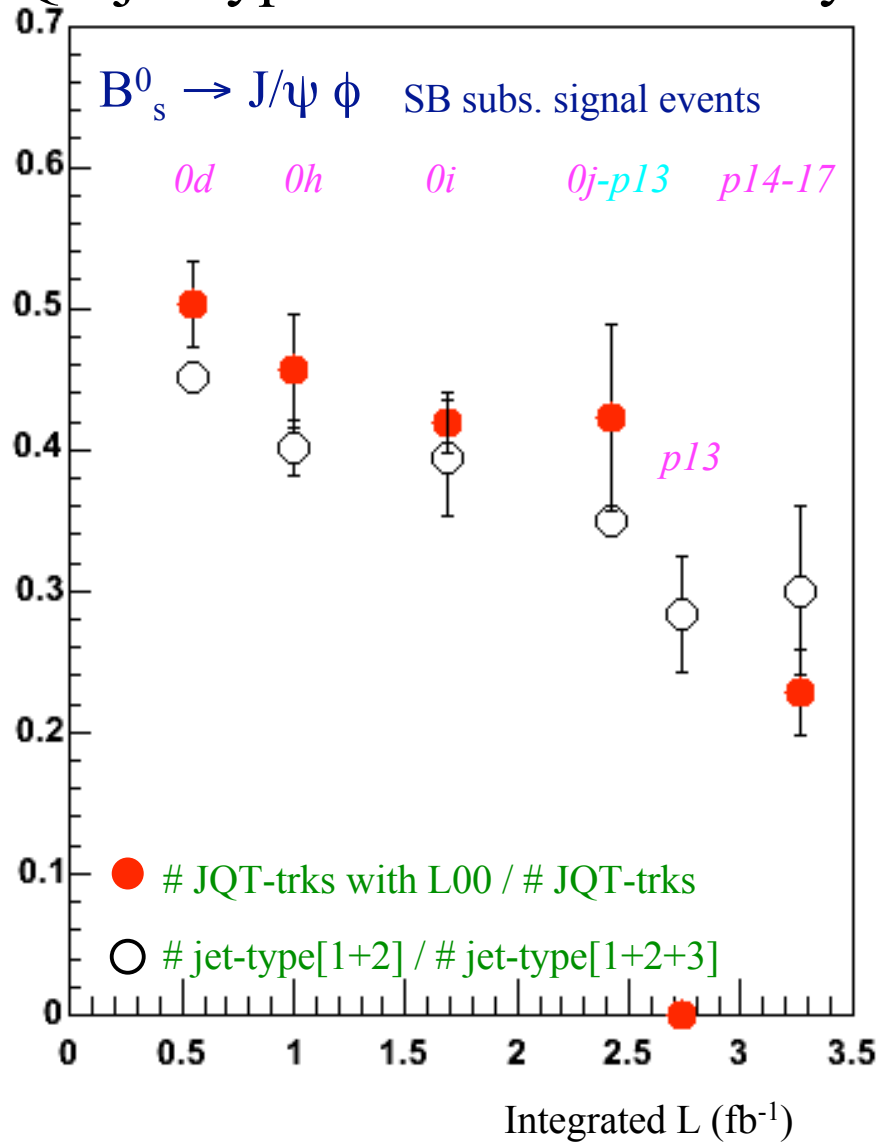
Jet Charge Tagger

Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*

Order of variables: decision, dilution, jet-charge, tag type



JQT jet-type vs. “L00 efficiency”



Errors reflect the difference between the results obtained at two sets of Signal/SB windows

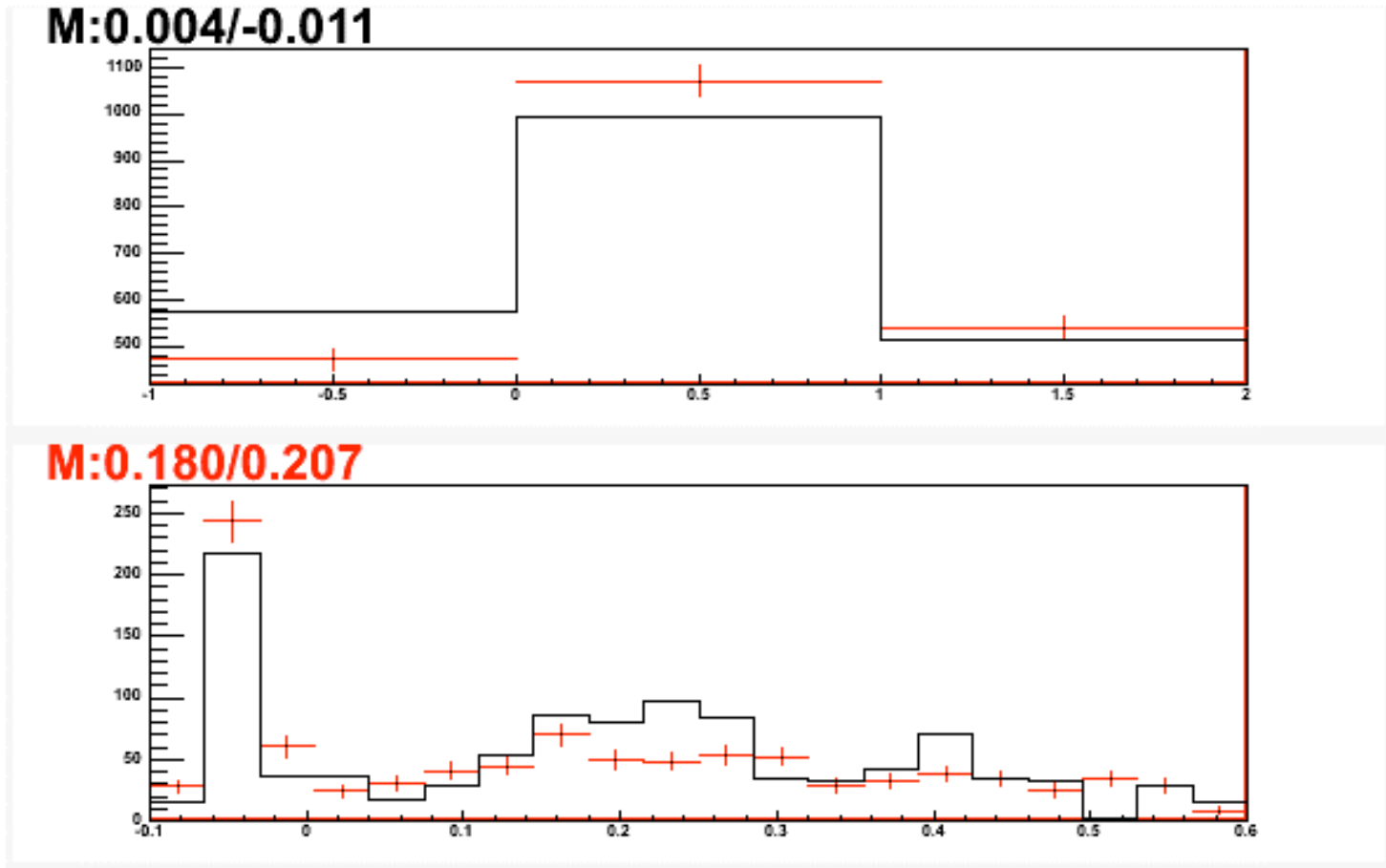
SB1: 5.2861-5.3131
Signal: 5.3400-5.3940
SB2: 5.4211-5.4481

SB1: 5.175 - 5.202
Signal: 5.3400-5.3940
SB2: 5.547 - 5.575

Same Side Tagger (NN – SSKT)

Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*

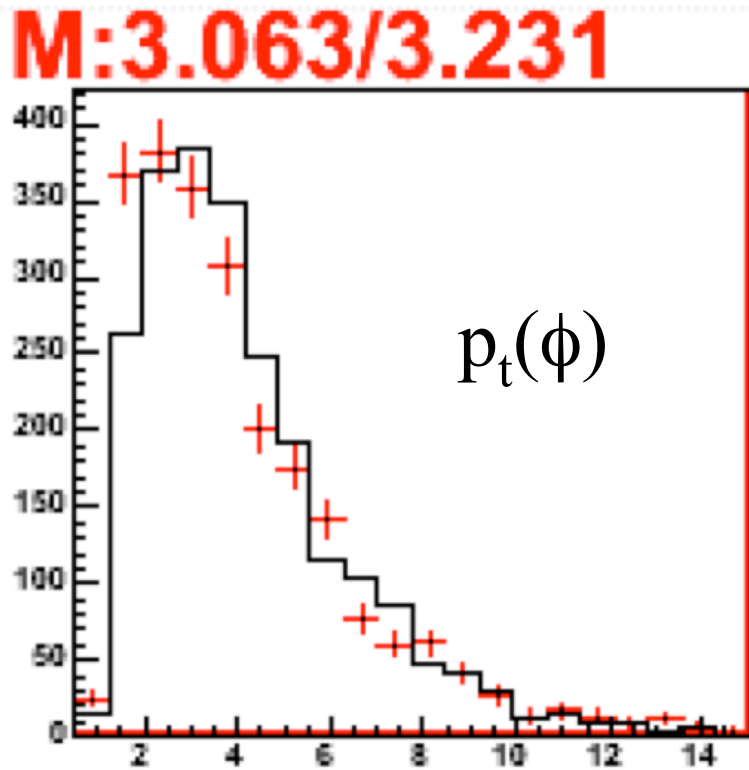
Order of variables: decision, dilution



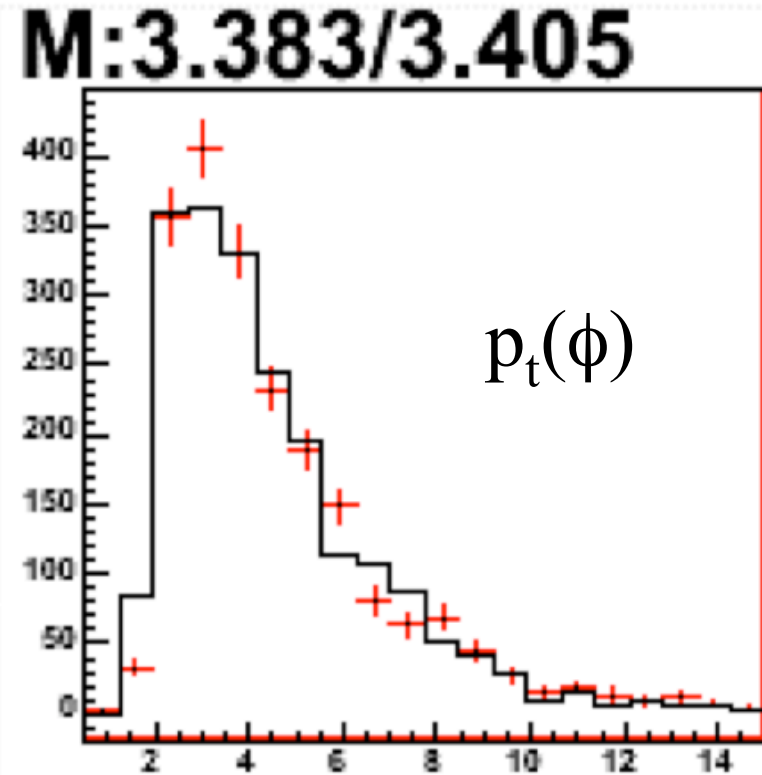
Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*

⇒ The *use* of the bad-calibrated **PID** in the $L > 1.35$ sample does produce a significant *effect* on $p_t(\phi)$

Bst, NN-*with*-PID, 0.5



Bst, NN-*without*-PID, 0.5

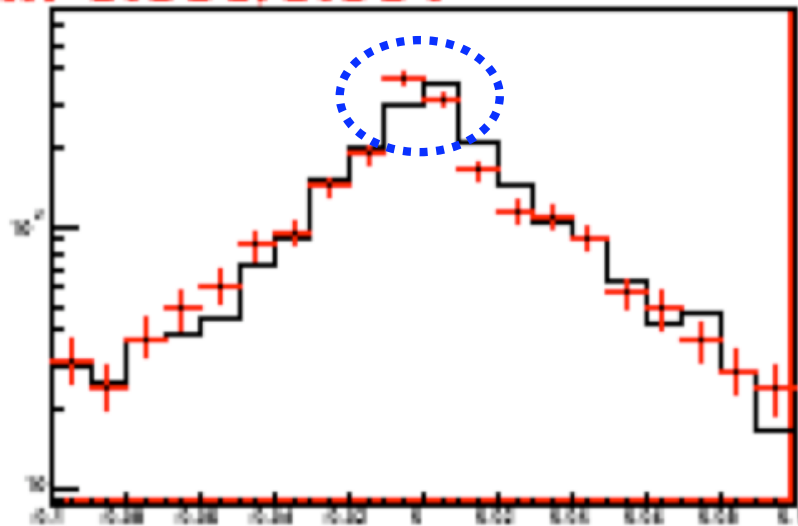


Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*

⇒ The **use** of the bad-calibrated **PID** in the $L > 1.35$ sample does “apparently” produce an **effect** at low values of $d_0(\mu)$ (μ, s from J/ψ)

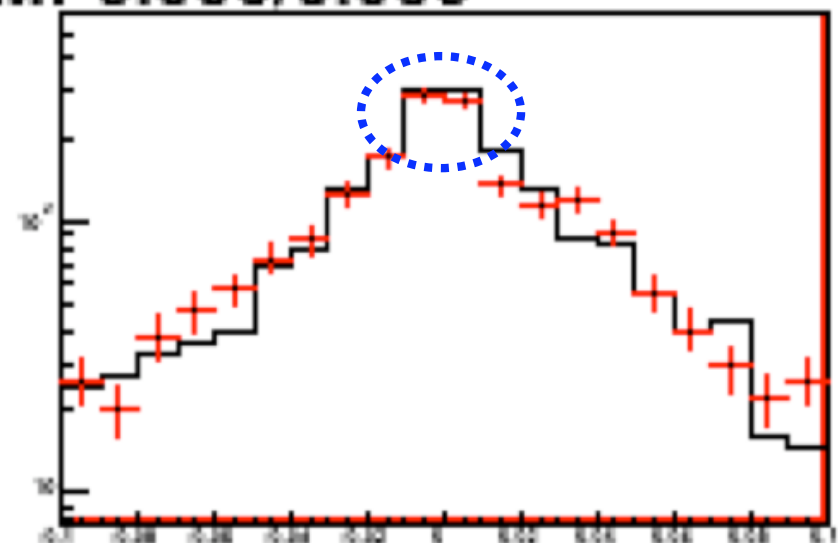
Bst, NN-**with**-PID, 0.5

M: -0.000/0.001



Bst, NN-with**out**-PID, 0.5

M: -0.000/0.000

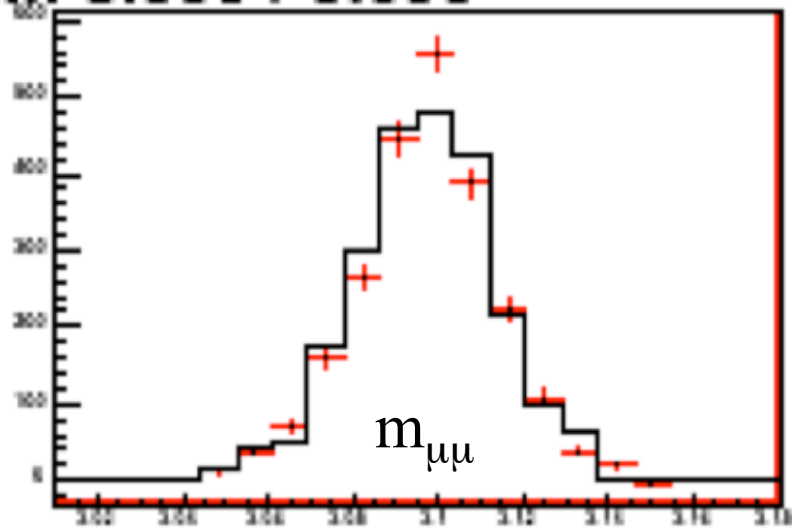


⇒ The **use** of the bad-calibrated **PID** in the $L > 1.35$ sample does **not** produce a significant **effect** to the J/ψ mass distribution

Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*

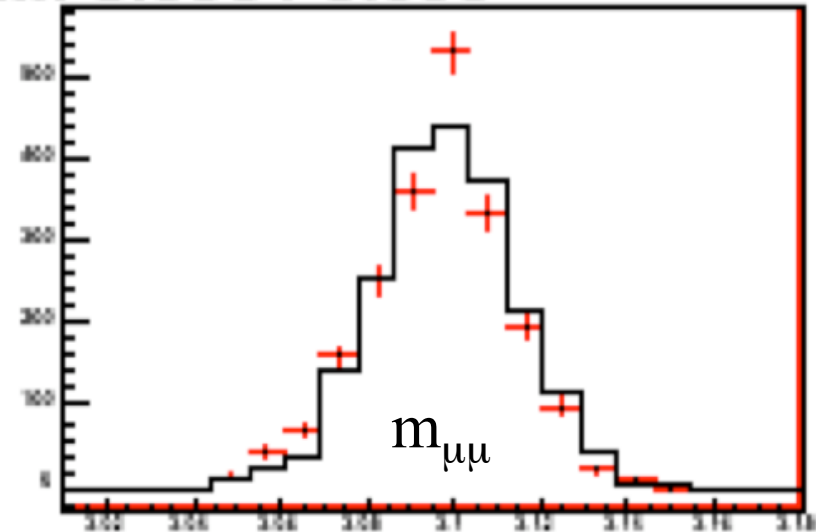
Bst, NN-**with**-PID, 0.5

M: 3.099 / 3.099



Bst, NN-**with**out-PID, 0.5

M: 3.098 / 3.099

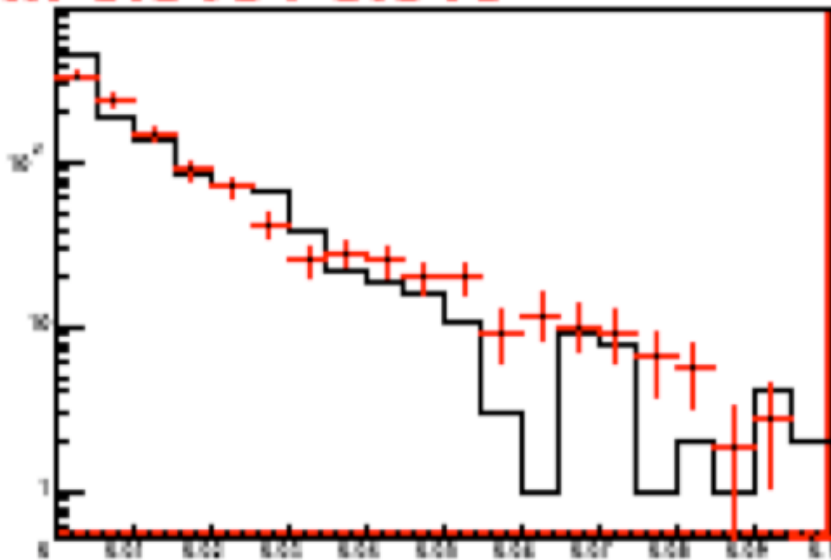


⇒ The **use** of the bad-calibrated **PID** in the $L > 1.35$ sample does **not** produce a significant **effect** to the d_0 J/ψ distribution

Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*

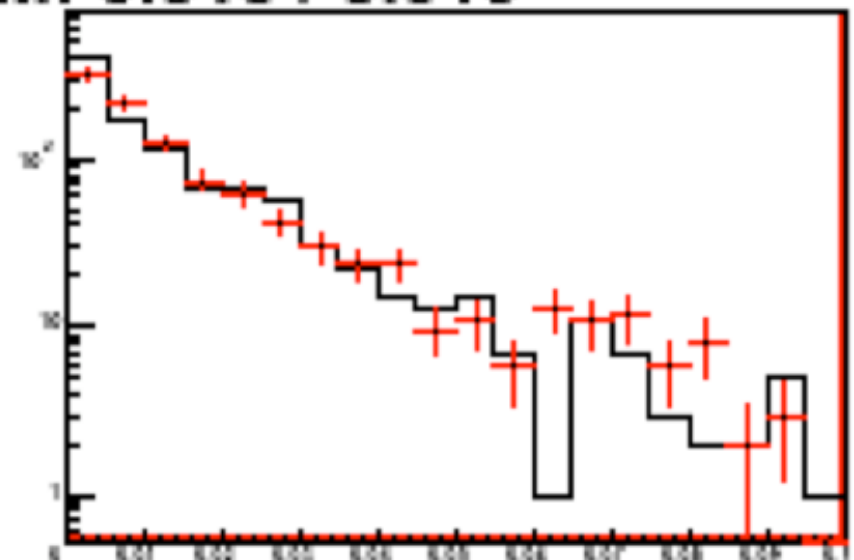
Bst, NN-**with**-PID, 0.5

M: 0.010 / 0.010



Bst, NN-**with**out-PID, 0.5

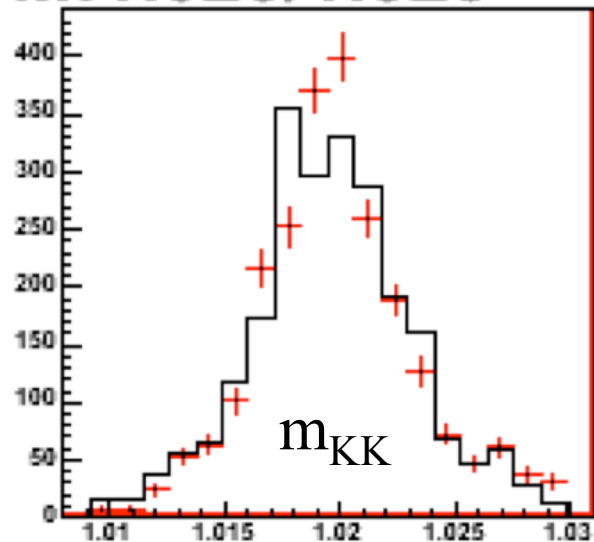
M: 0.010 / 0.010



⇒ The **use** of the bad-calibrated **PID** in the $L > 1.35$ sample does **not** produce a significant **effect** to the ϕ mass distribution

Bst, NN-**with**-PID, 0.5

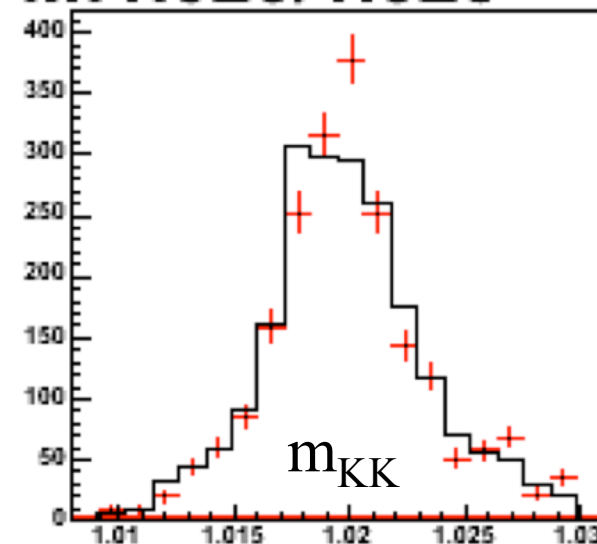
M:1.020/1.020



Bst-ntuples,
 $L < 1.35$ **red**,
 $L > 1.35$ **black**

Bst, NN-**with**out-PID, 0.5

M:1.020/1.020



⇒ In addition, it seems that the lower L00 hit content of the tracks in $L > 1.35$ is playing also no role in the ϕ mass distribution

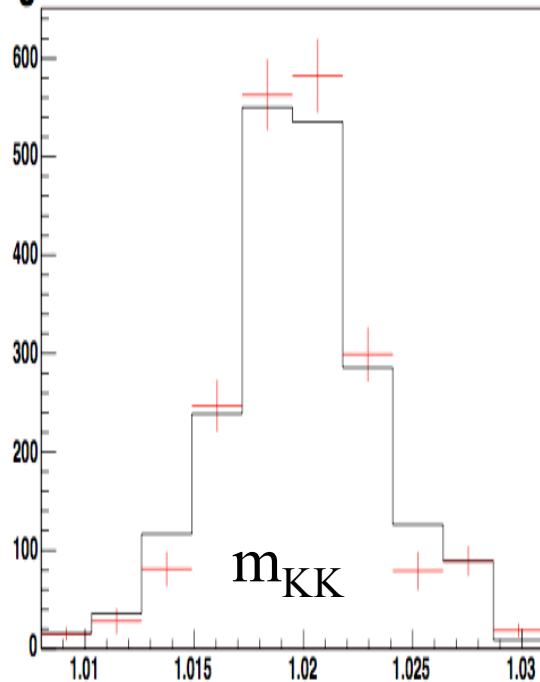
Bit-nuples 0.26, $L < 1.35$ red, $L > 1.35$ black

No L00-hit require.

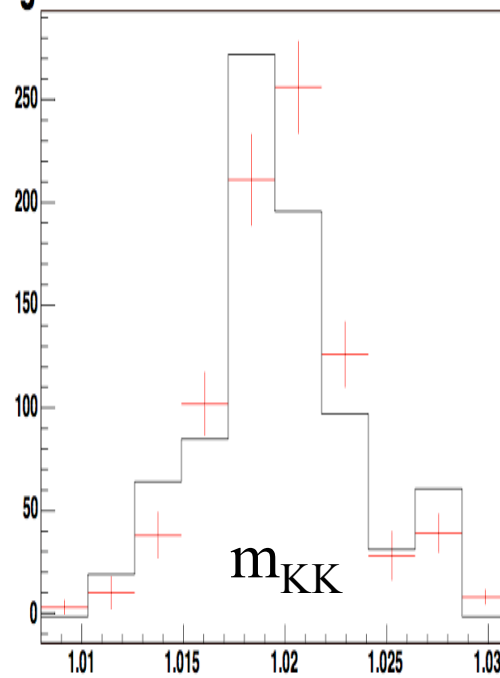
The 2 K_s w/ L00-hit

The 2 K_s no L00-hit

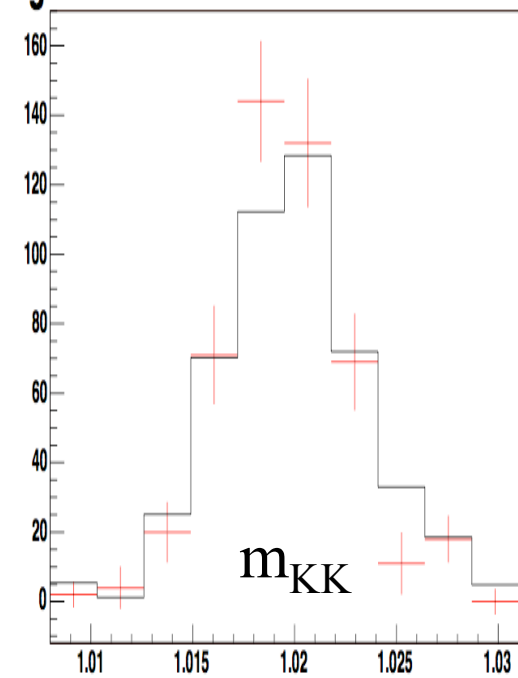
sigma: $2.78 \pm 0.11 / 3.13 \pm 0.14$



sigma: $2.78 \pm 0.17 / 2.92 \pm 0.28$



sigma: $2.73 \pm 0.21 / 3.31 \pm 0.23$

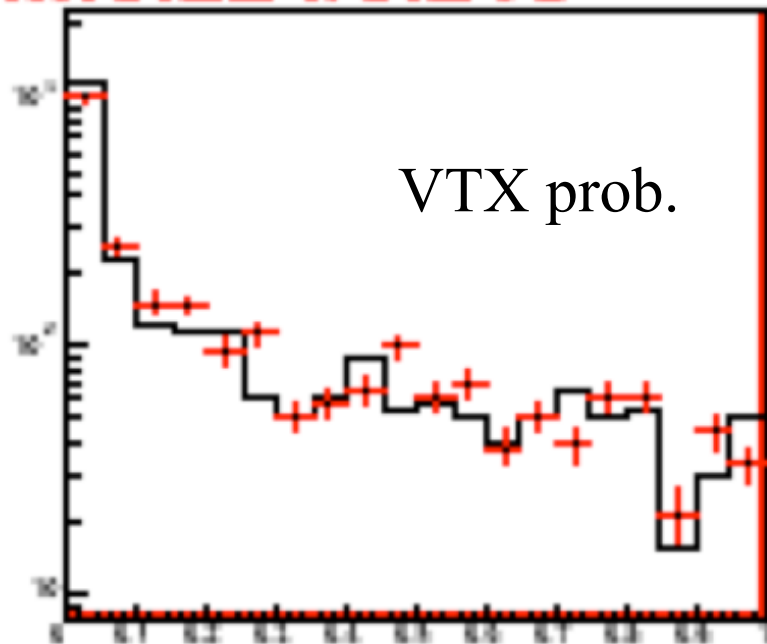


⇒ The **use** of the bad-calibrated **PID** in the $L > 1.35$ sample does produce some, unclear, effect to the B_s^0 VTX probability distribution

Bst-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*

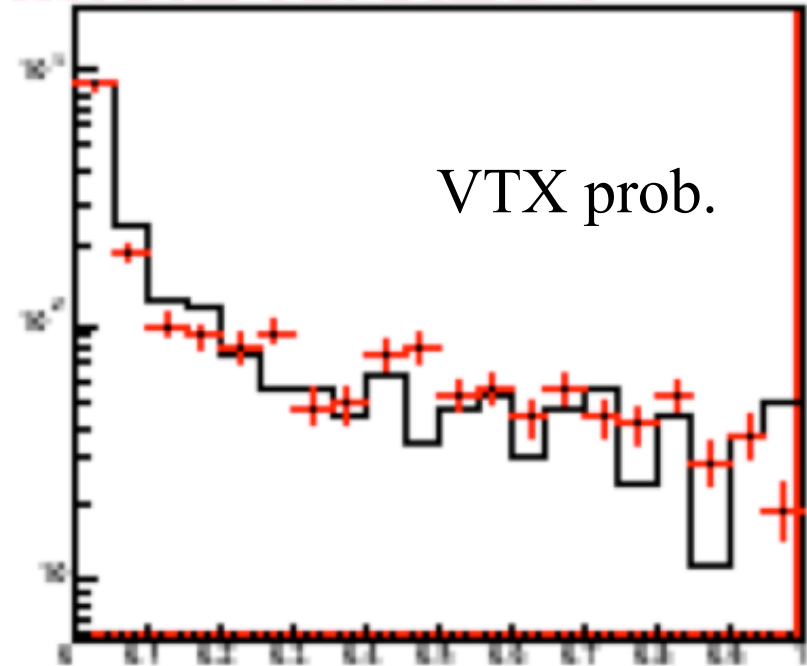
Bst, NN-**with**-PID, 0.5

M:0.224/0.218



Bst, NN-**with**out-PID, 0.5

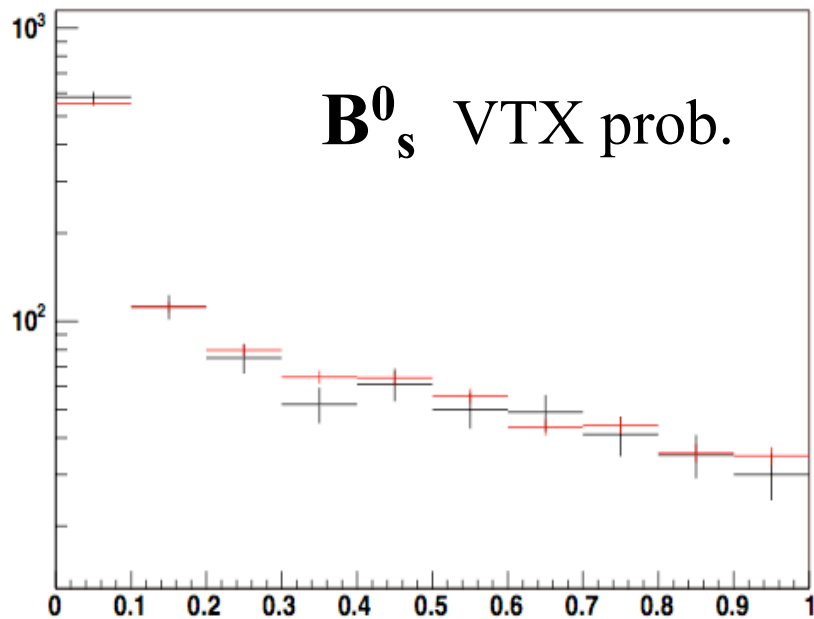
M:0.245/0.234



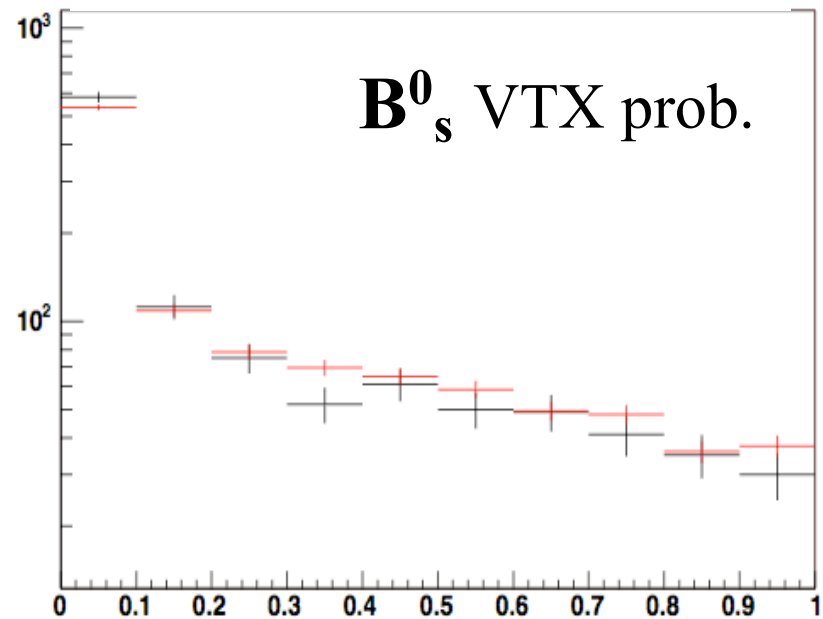
⇒ However, in the Blt-ntuple analysis it seems that the lower L00 hit content of the tracks in $L > 1.35$ is playing some role in the B_s^0 VTX probability distribution

Blt-ntuples, no L00 requirement *black*, L00 requirement *red*

at least 1 K .OR. at least 1μ
with L00 hit



at least 1 K .AND. at least
 1μ with L00 hit



Blt-ntuples, $L < 1.35$ *red*, $L > 1.35$ *black*