D^0 pp reference

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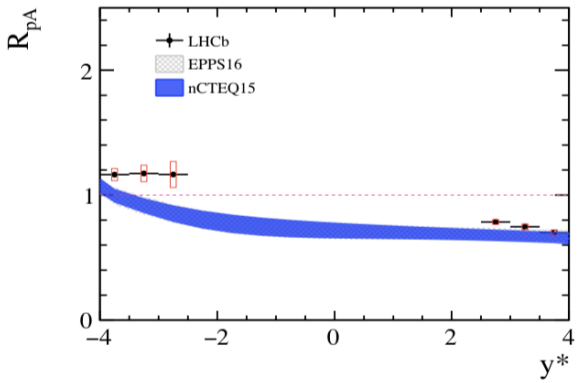
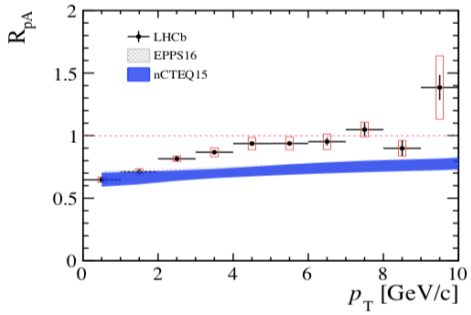
Open charm meeting
3 September 2019

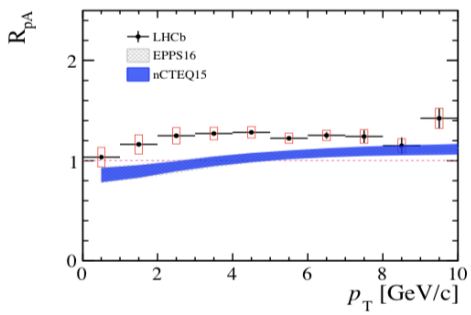
From Jianqiao's presentation

- $R_{p\mathrm{Pb}}$ – y:



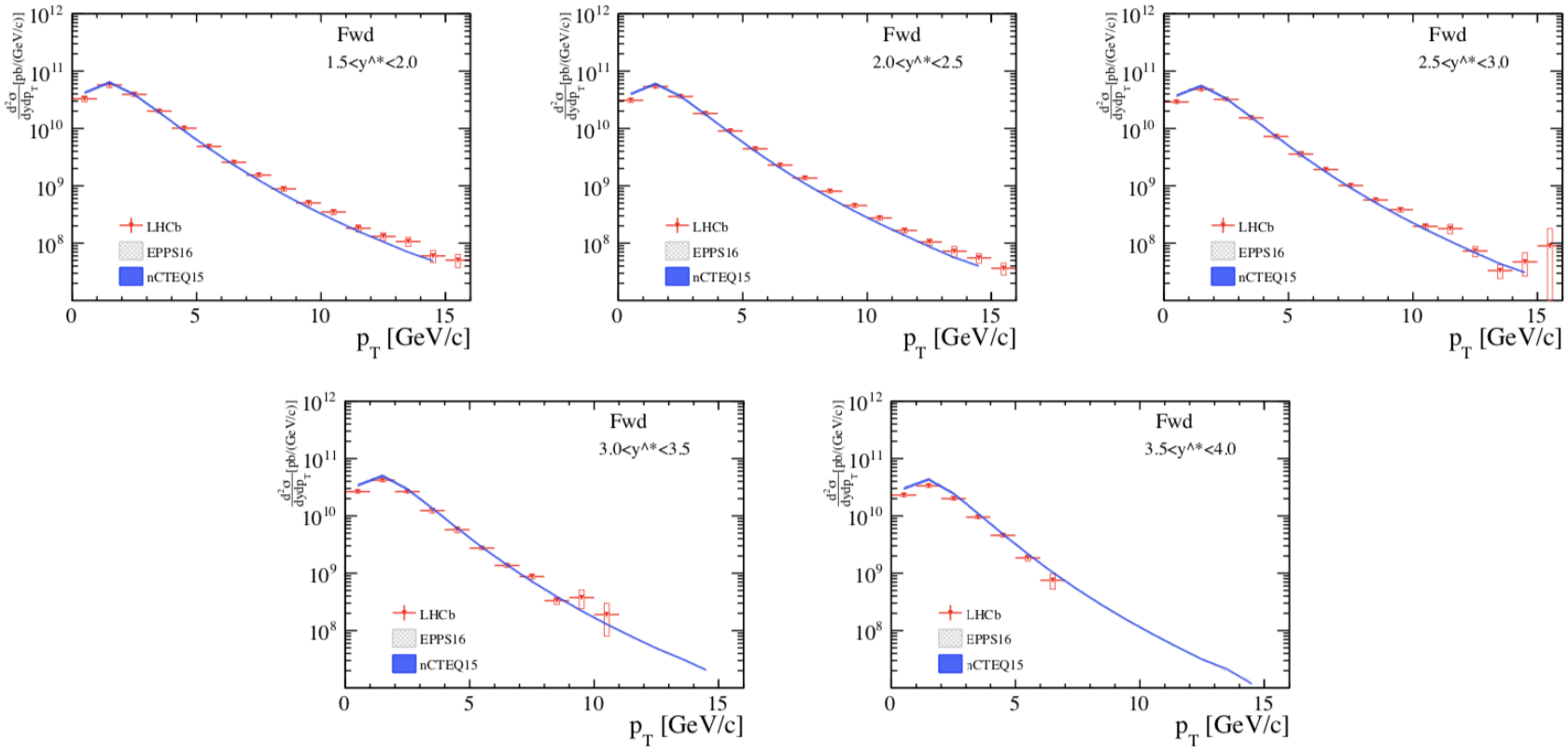
- $R_{p\mathrm{Pb}}$ – p_{T} ;





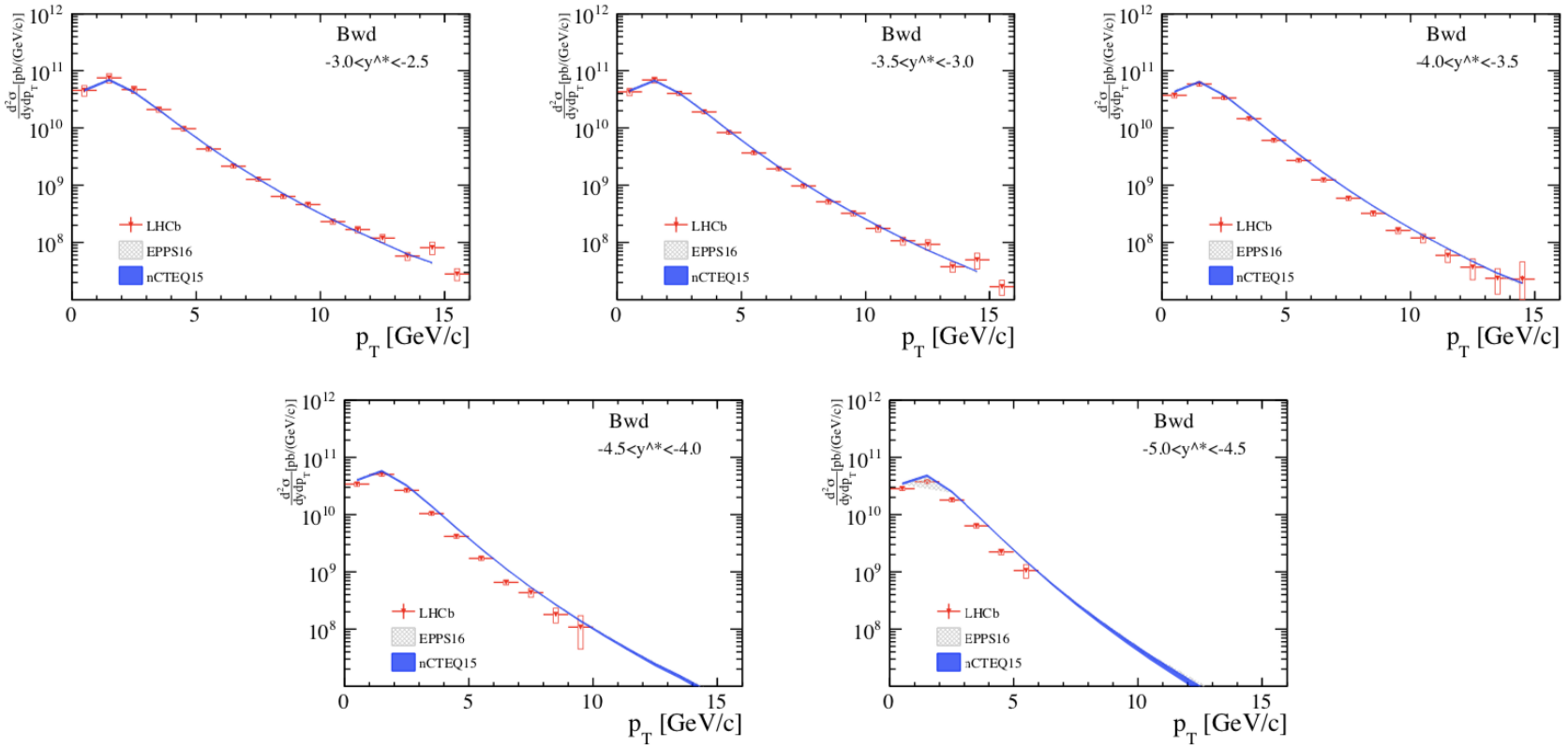
R_{pA} is larger than theoretical calculations

From Jianqiao's presentation



At the same time, the cross-section seems to be compatible (or even less?) than theoretical calculations

From Jianqiao's presentation

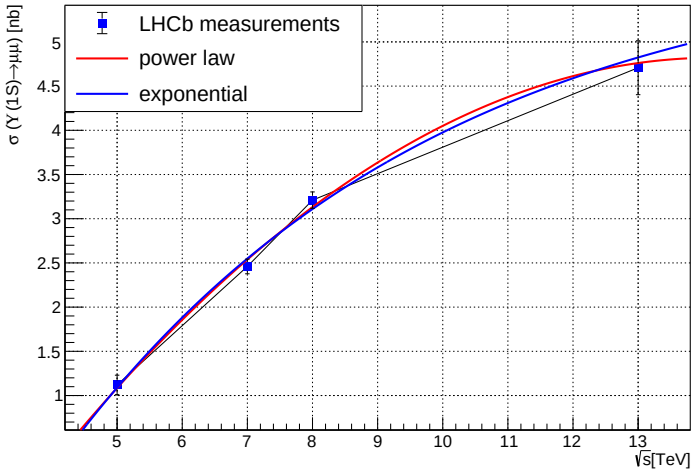


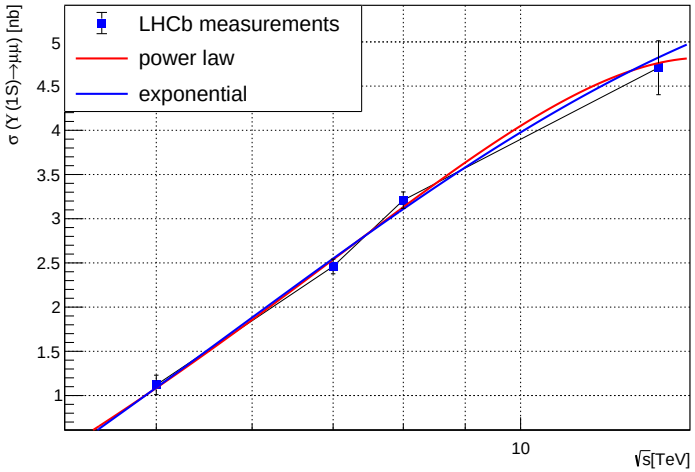
At the same time, the cross-section seems to be compatible (or even less?) than theoretical calculations

How good is the *pp* reference?

- At LHCb we measured 5 TeV, 7 TeV, 13 TeV D^0 production cross-section
- No 8 TeV (which can be good reference of 8.16 TeV)
- How to interpolate to 8.16 TeV with existing points?

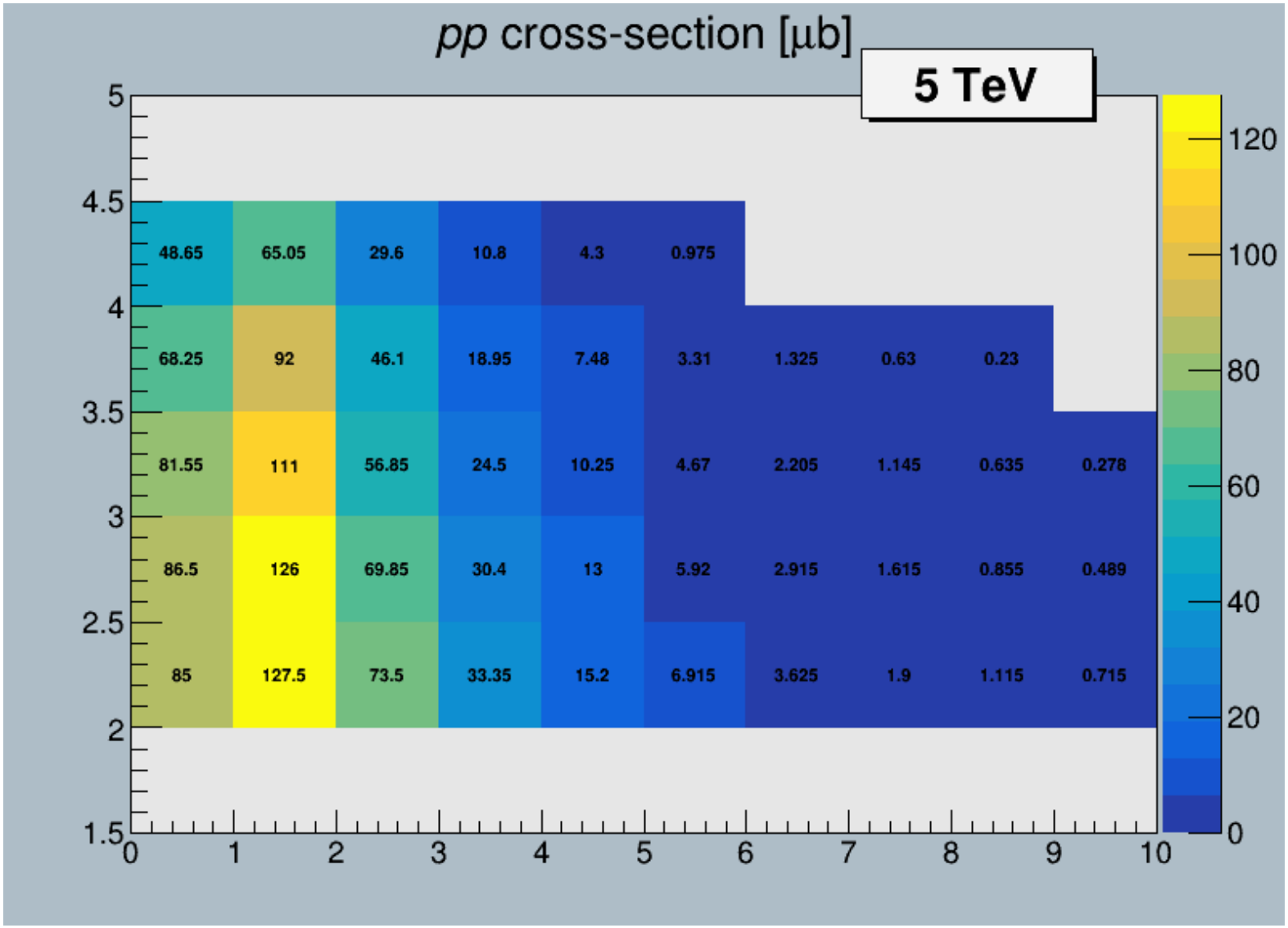
Interpolate to 8.16 TeV - $\Upsilon(1S)$



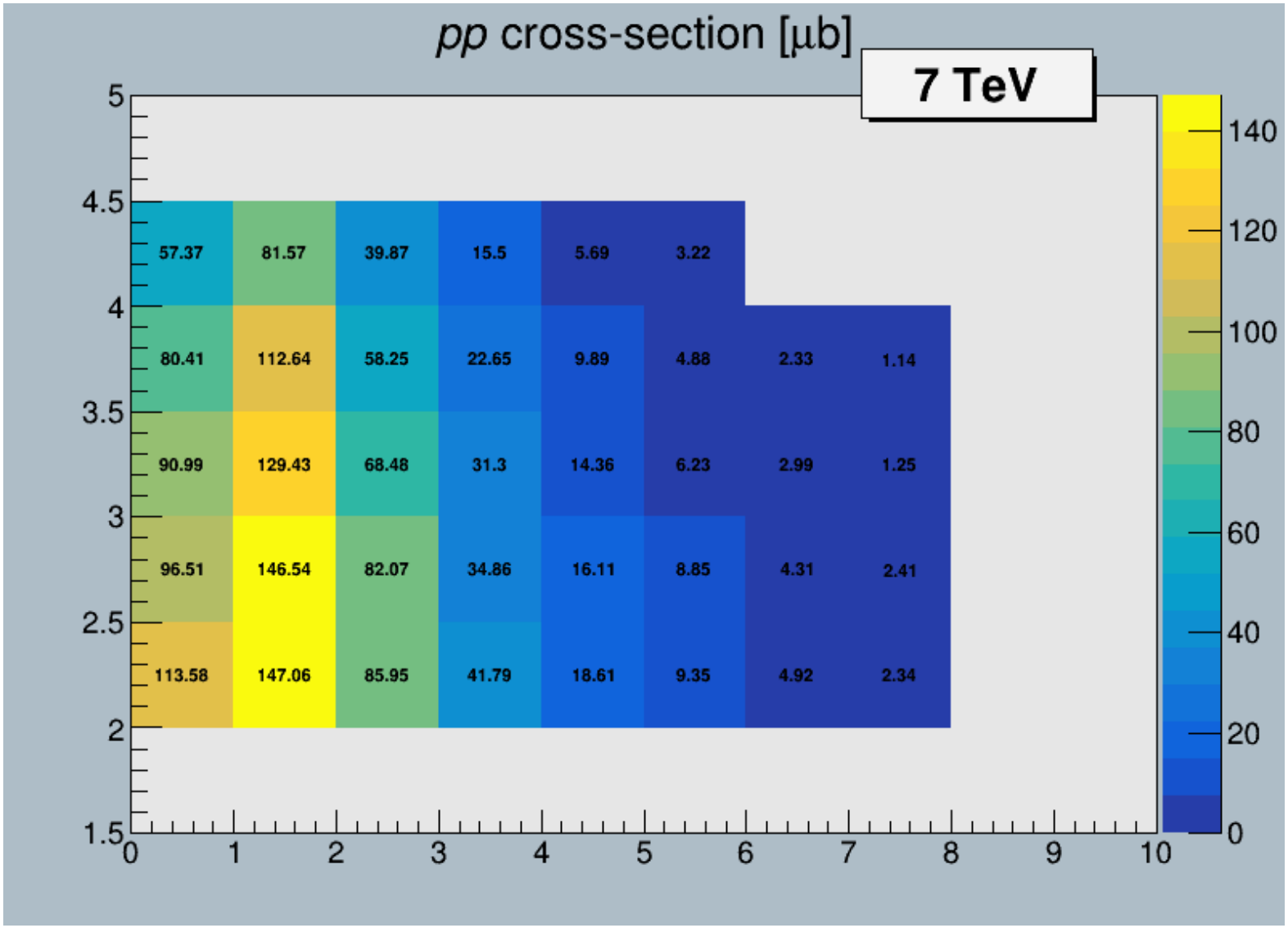


- $\Upsilon(1S)$ cross-section has four measured energy in pp
- When set x-axis in log scale, the trend is almost linear

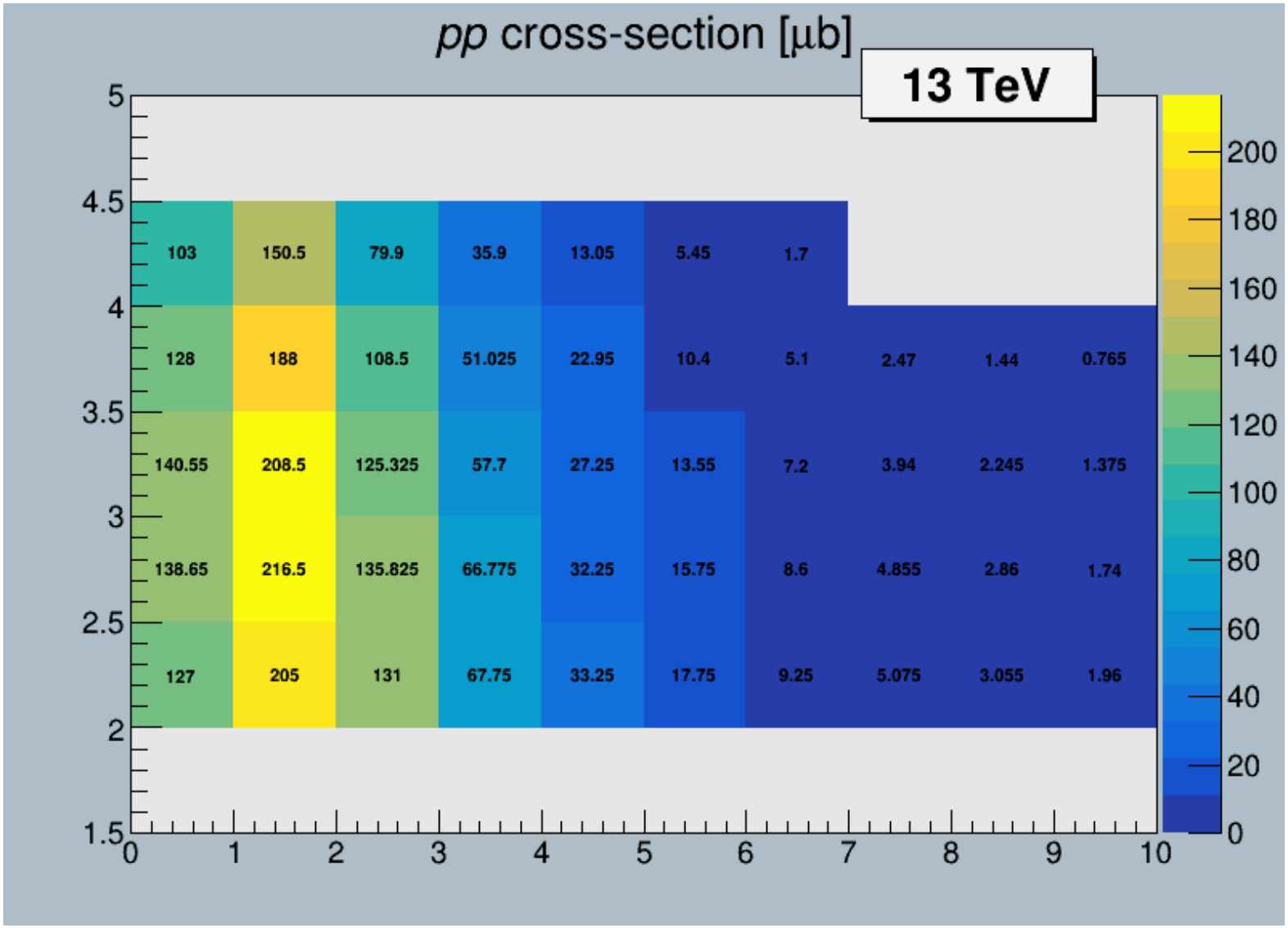
D^0 pp reference - 5 TeV



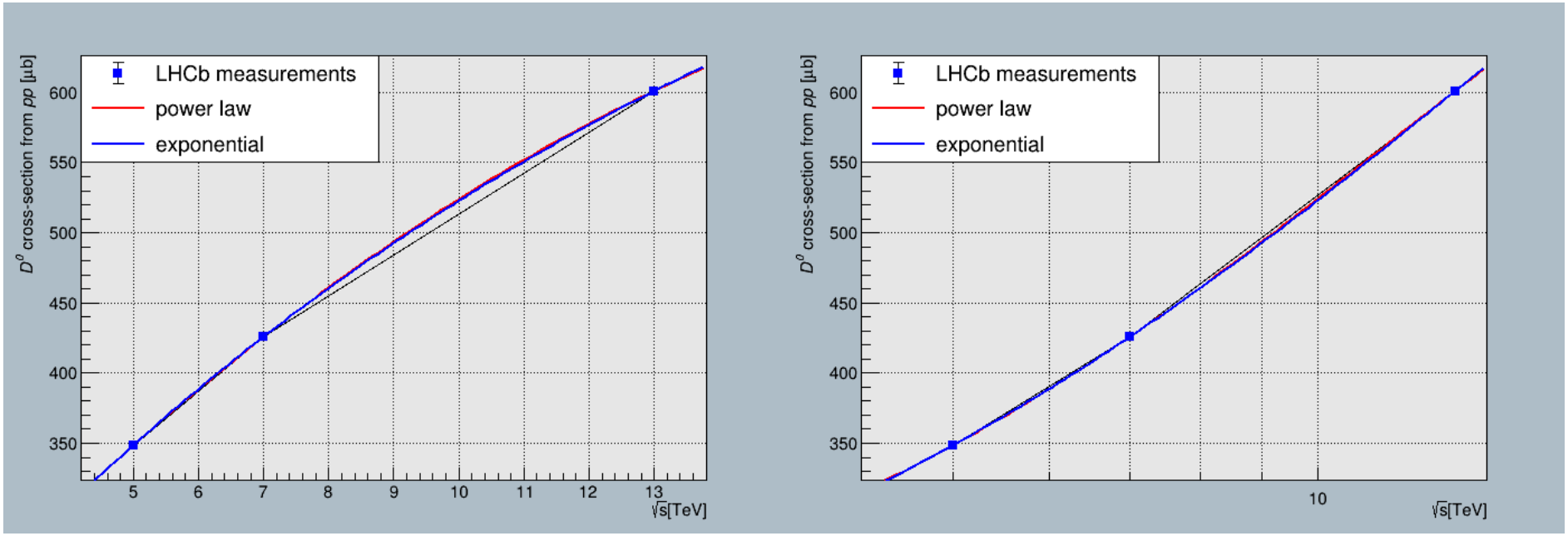
D^0 pp reference - 7 TeV



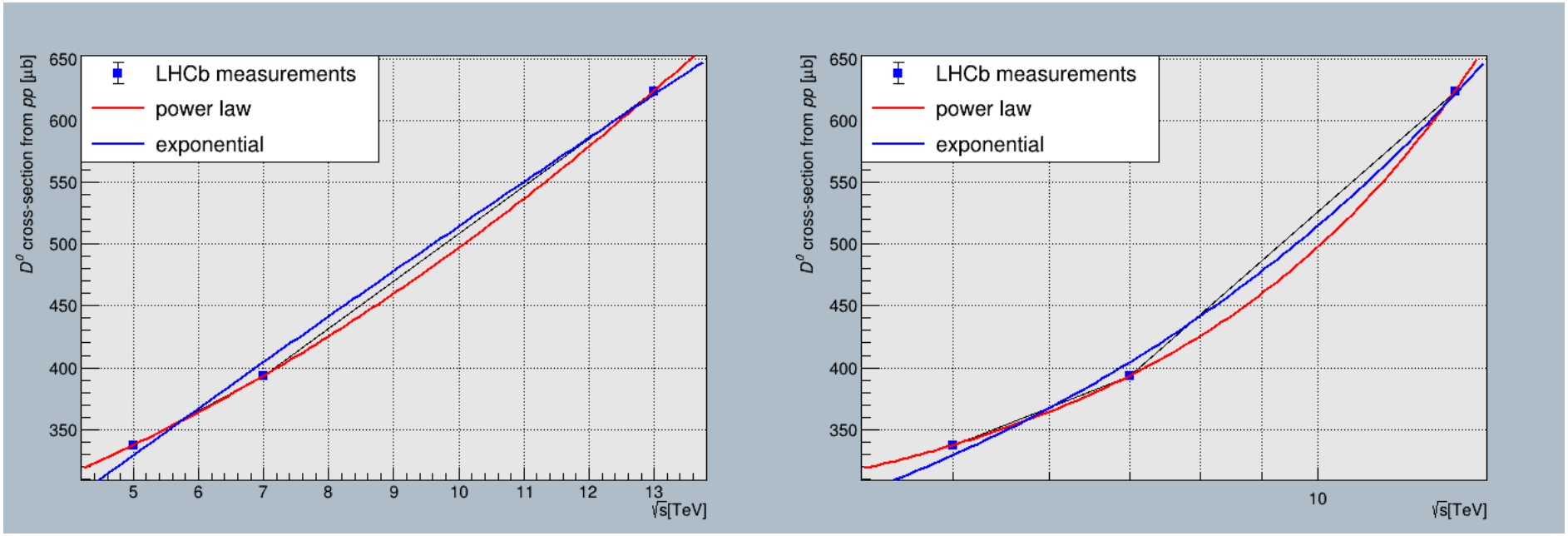
D^0 pp reference - 13 TeV



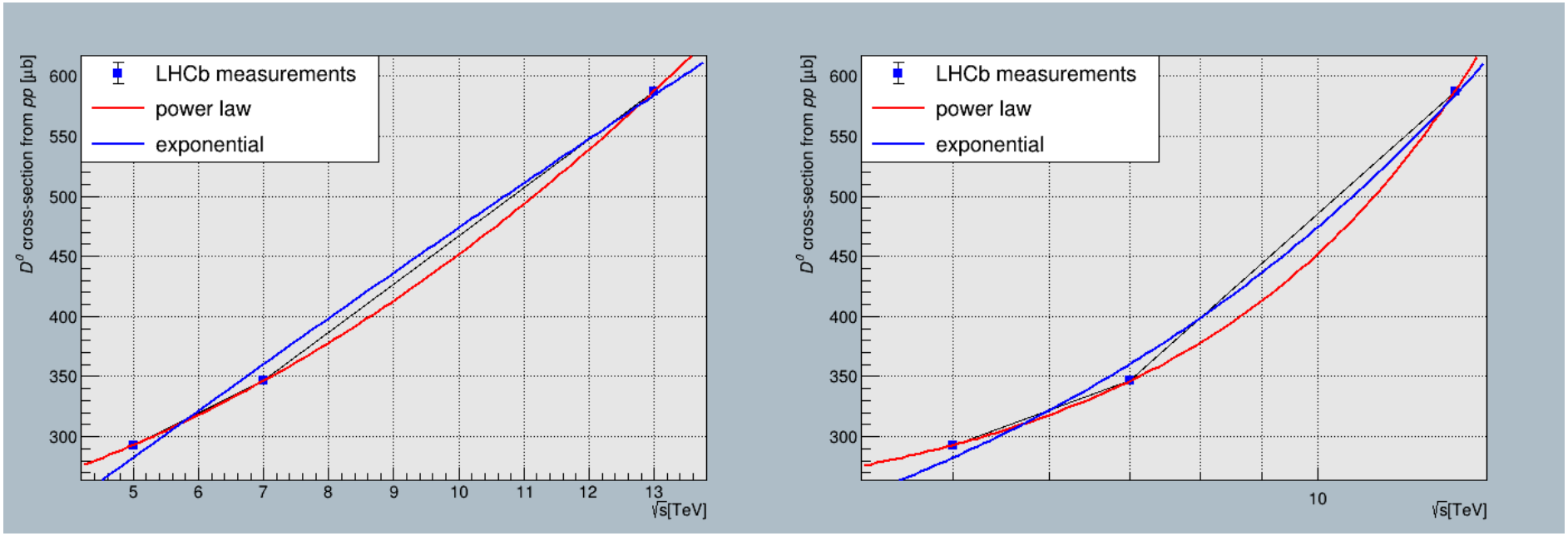
Interpolate to 8.16 TeV - y∈[2.0, 2.5)



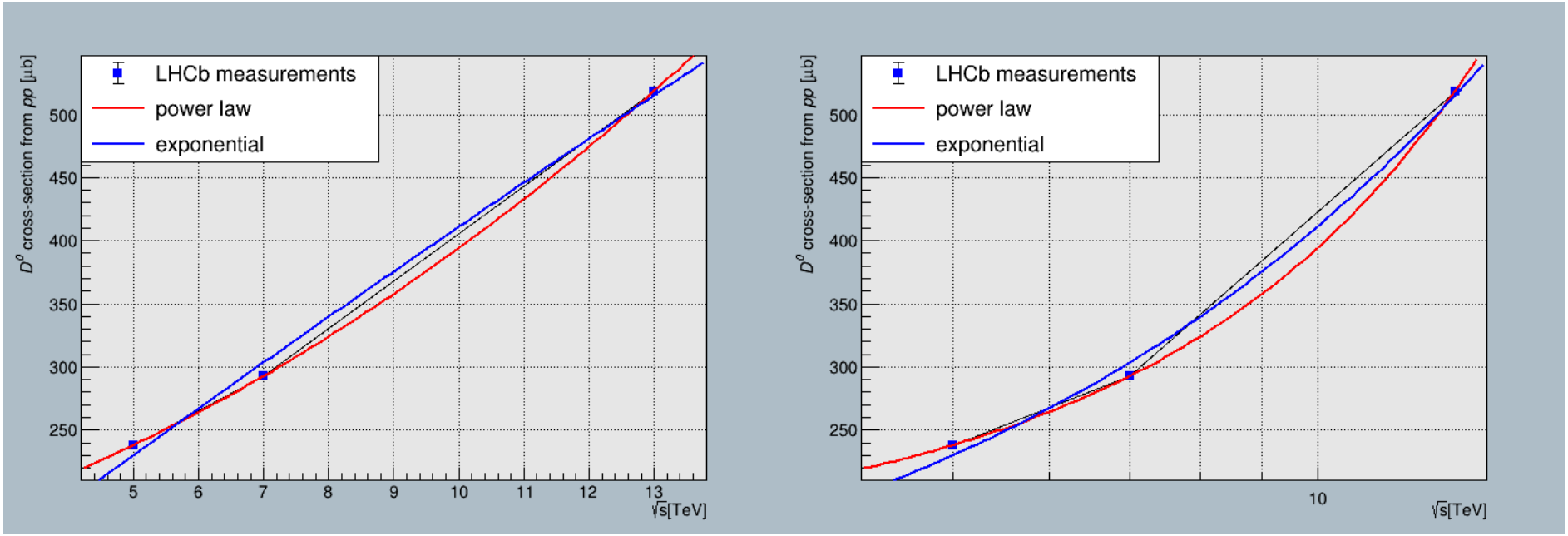
Interpolate to 8.16 TeV - y∈[2.5, 3.0)



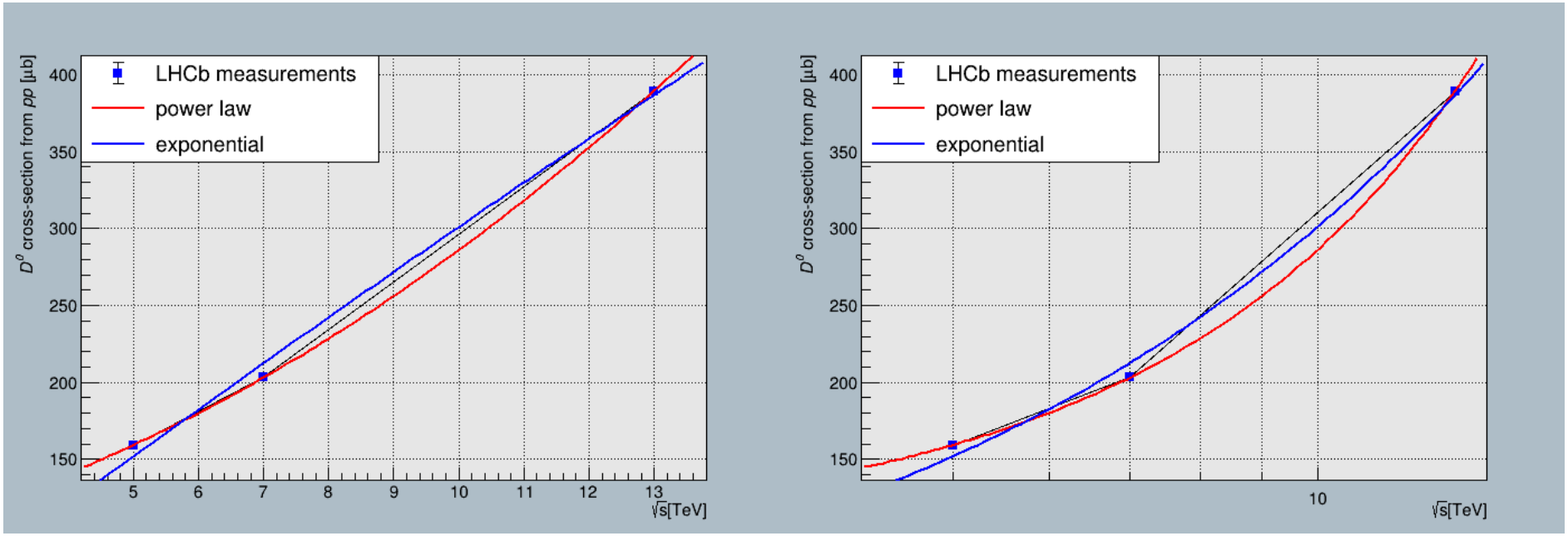
Interpolate to 8.16 TeV - y∈[3.0, 3.5)



Interpolate to 8.16 TeV - y∈[3.5, 4.0)



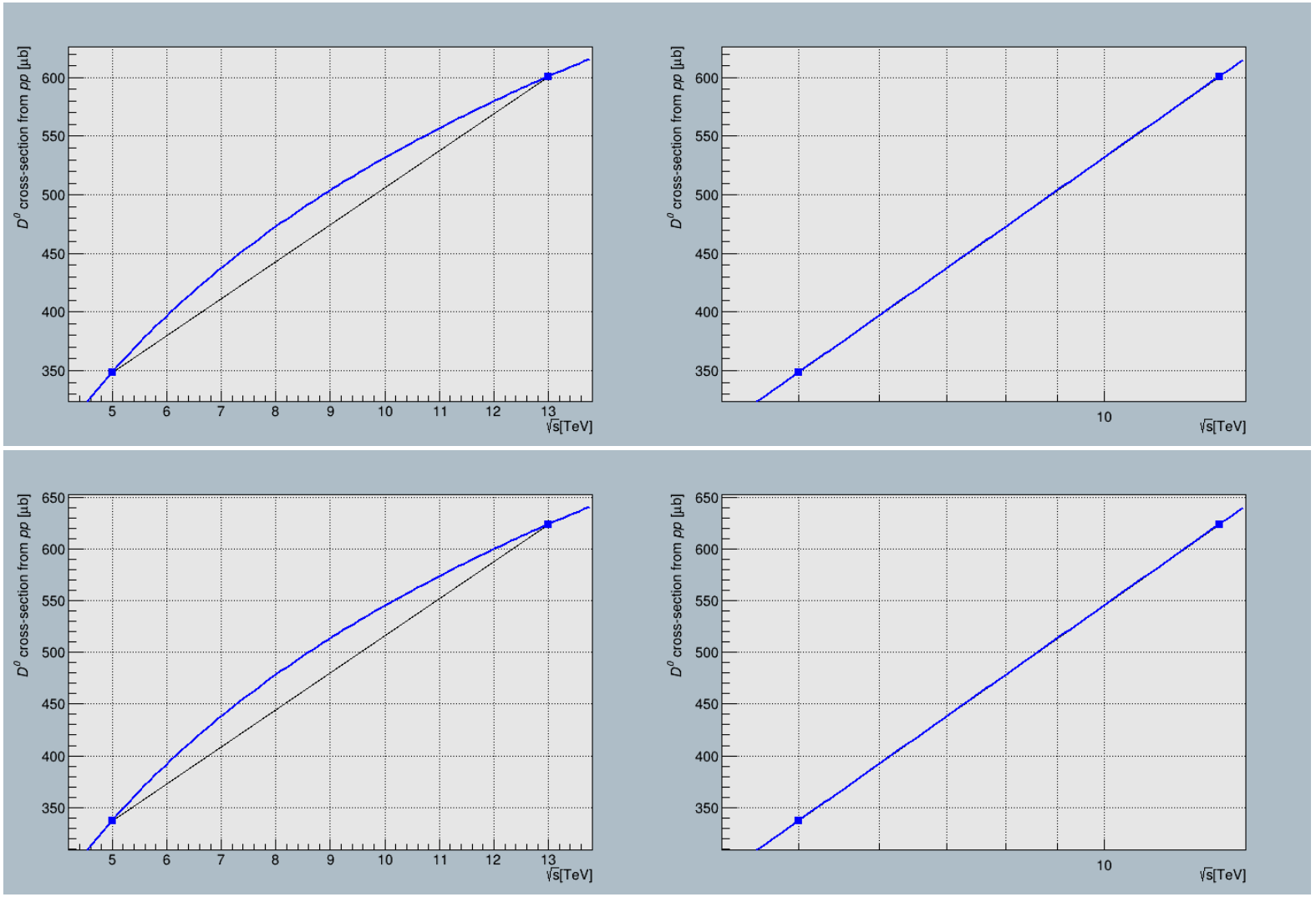
Interpolate to 8.16 TeV - y∈[4.0, 4.5]



7 TeV *pp* reference cross-section too small?

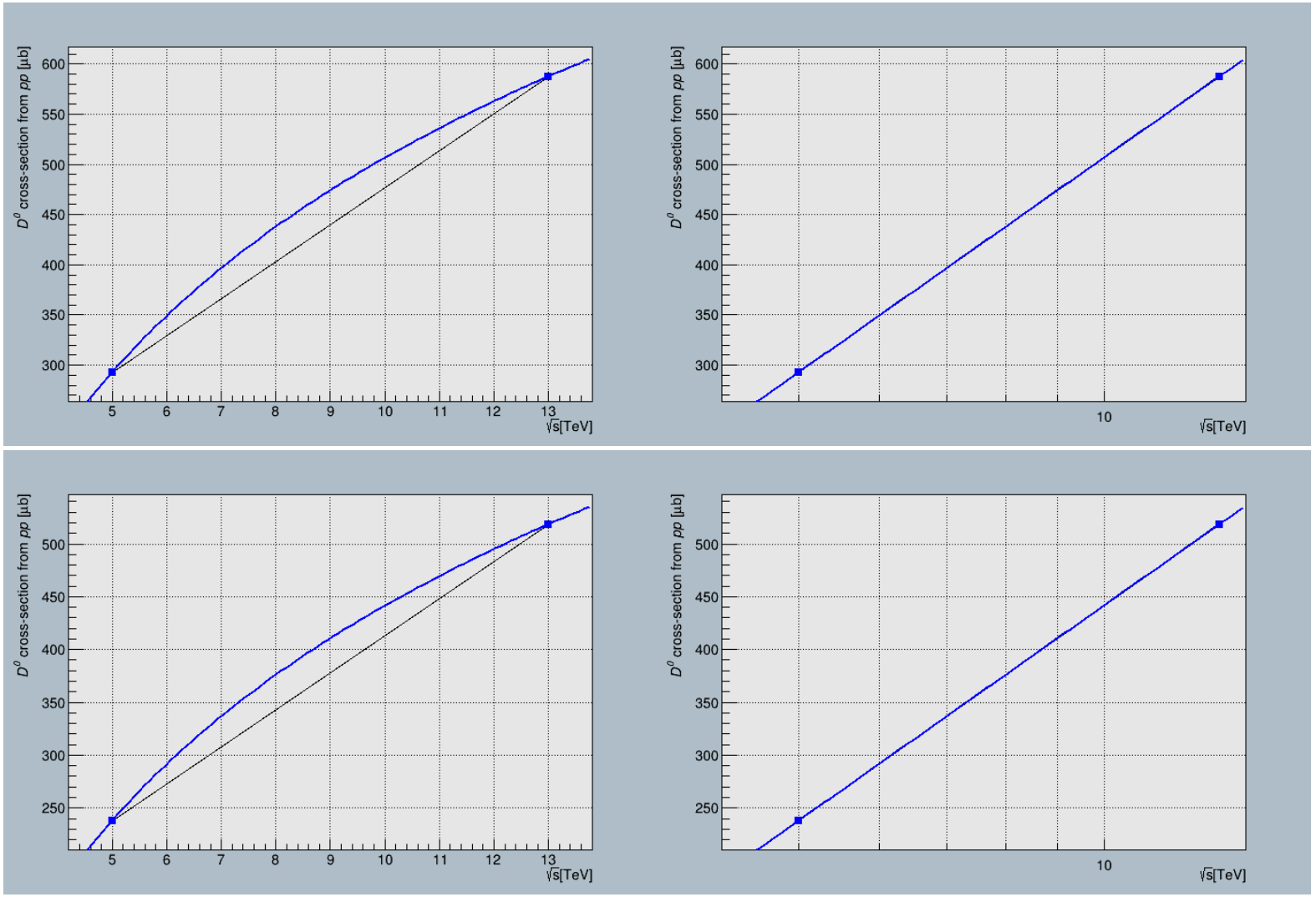
- 2010 data (how much we can trust?)

Option 1: only use 5 TeV and 13 TeV - y∈[2.0, 3.0)



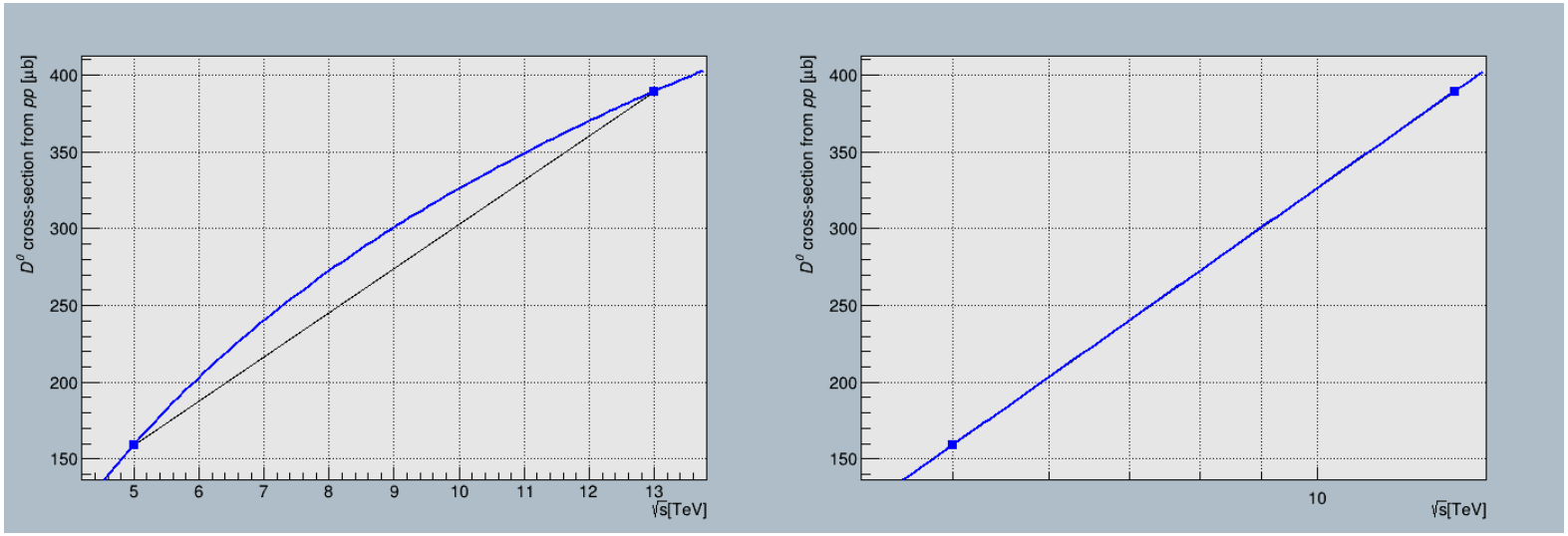
Linear interpolation on the plot with x-axis in log scale

Option 1: only use 5 TeV and 13 TeV - y∈[3.0, 4.0)



Linear interpolation on the plot with x-axis in log scale

Option 1: only use 5 TeV and 13 TeV - y∈[4.0, 4.5]



Linear interpolation on the plot with x-axis in log scale

$y^{(*)}$	pPb CS	pp CS×A, 5&7&13 TeV	pp CS×A, 5&13 TeV
$2.0< y^{(*)} <2.5$	-	97.0(p)/96.9(e)	99.5
$2.5< y^{(*)} <3.0$	-	89.6(p)/93.1(e)	100.7
$3.0< y^{(*)} <3.5$	-	79.8(p)/84.2(e)	92.4
$3.5< y^{(*)} <4.0$	-	68.5(p)/71.9(e)	79.5
$4.0< y^{(*)} <4.5$	-	48.4(p)/51.4(e)	57.7

Option 2?