

# Low- $p_T$ UPC $D^0$ analysis using '23 UPC reconstruction data

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**Group Meeting**  
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- **Preliminary results in analysis note:**
  - Documented the preliminary low- $p_T$  y-dependent D production measurement ( $2 \leq D_{pT} \leq 5$  GeV) in the analysis note [[link](#)]

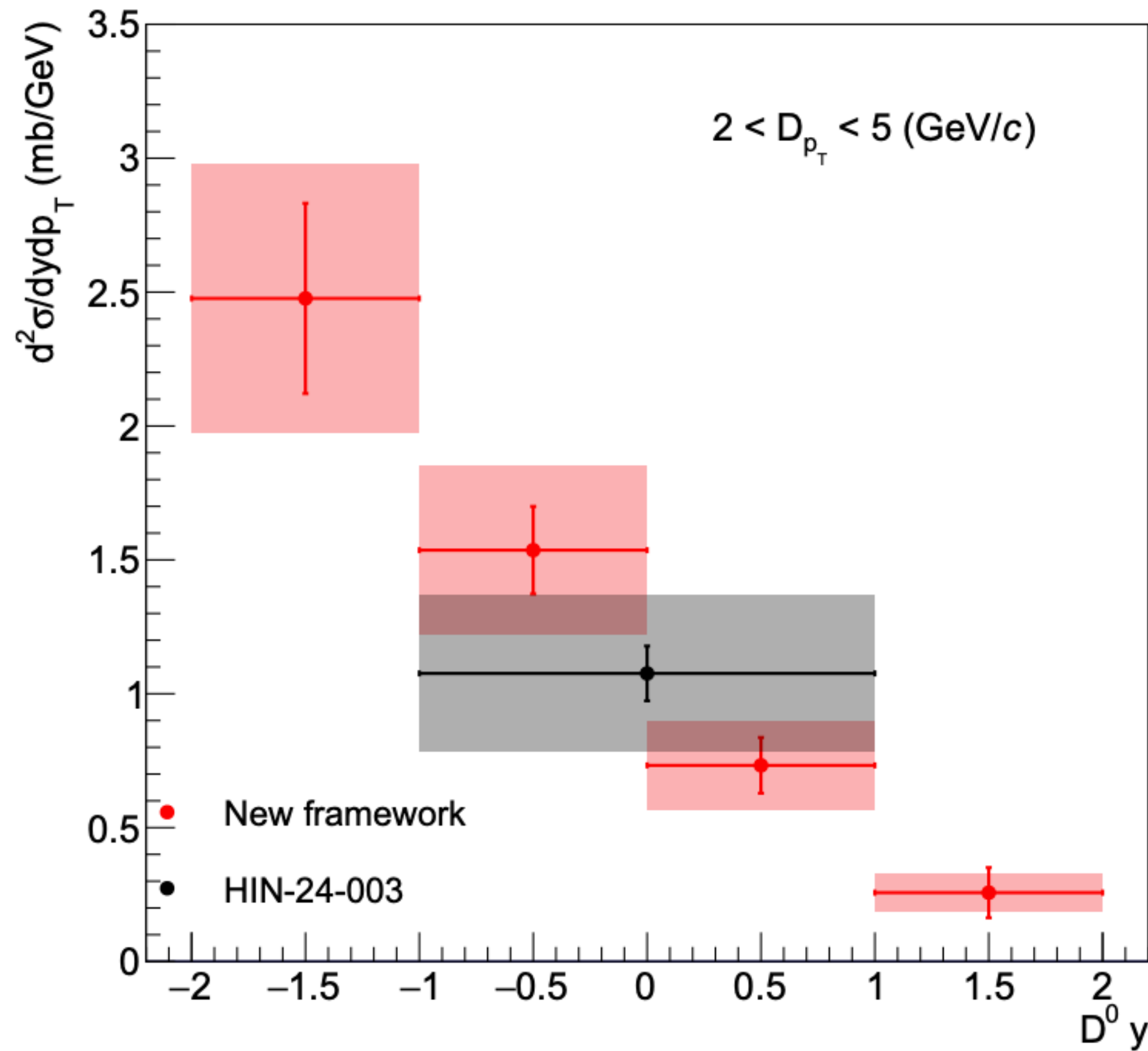
✕ iCMS toolkit		Collaboration ▾	Institute ▾	Administration ▾	Publications ▾	yuchenc ▾	
2025/014	BPH	with Run2 and early Run3 data	<a href="mailto:chiara.basile@cern.ch">chiara.basile@cern.ch</a>		Miaoyuan Liu, Jan-Frederik Schulte, Benjamin Simon	SUBMIT	
CMS AN-2025/015	HIN	Constraining nuclear PDFs at low- $x$ with low- $p_T$ $D^0$ production measurement in UPCs	Yu-chen Chen <a href="mailto:yu-chen.chen@cern.ch">yu-chen.chen@cern.ch</a>		Hannah Bossi, Yu-Chen Chen, Pin-Chun Chou, Jordan Lang, Christopher McGinn, Balazs Csaba Kovacs, Tzu-An Sheng, Jing Wang, Gian Michele Innocenti, Yen-Jie Lee, Cristian Baldenegro	SUBMIT	
CMS AN-	HIN	Multiplicity and transverse-momentum dependence of two-particle number and $p_T$ correlations in	Subash Chandra Behera		Subash Chandra Behera	DRAFT	

- We would like to request opening a CADI and to proceed with the review / approval process
- Received AN comments from the forward convener
- **Remaining tasks:**
  - Follow-up studies on the preliminary systematic assessment  
*Some systematics uncertainties are large. It is due to deficiency of MC statistics after investigations*
  - Current MC statistics is small. We've requested larger MC statistics, and aim to update the results with larger MC samples
  - Study data / MC differences, and derive the MC reweighting to improve the data & MC alignment

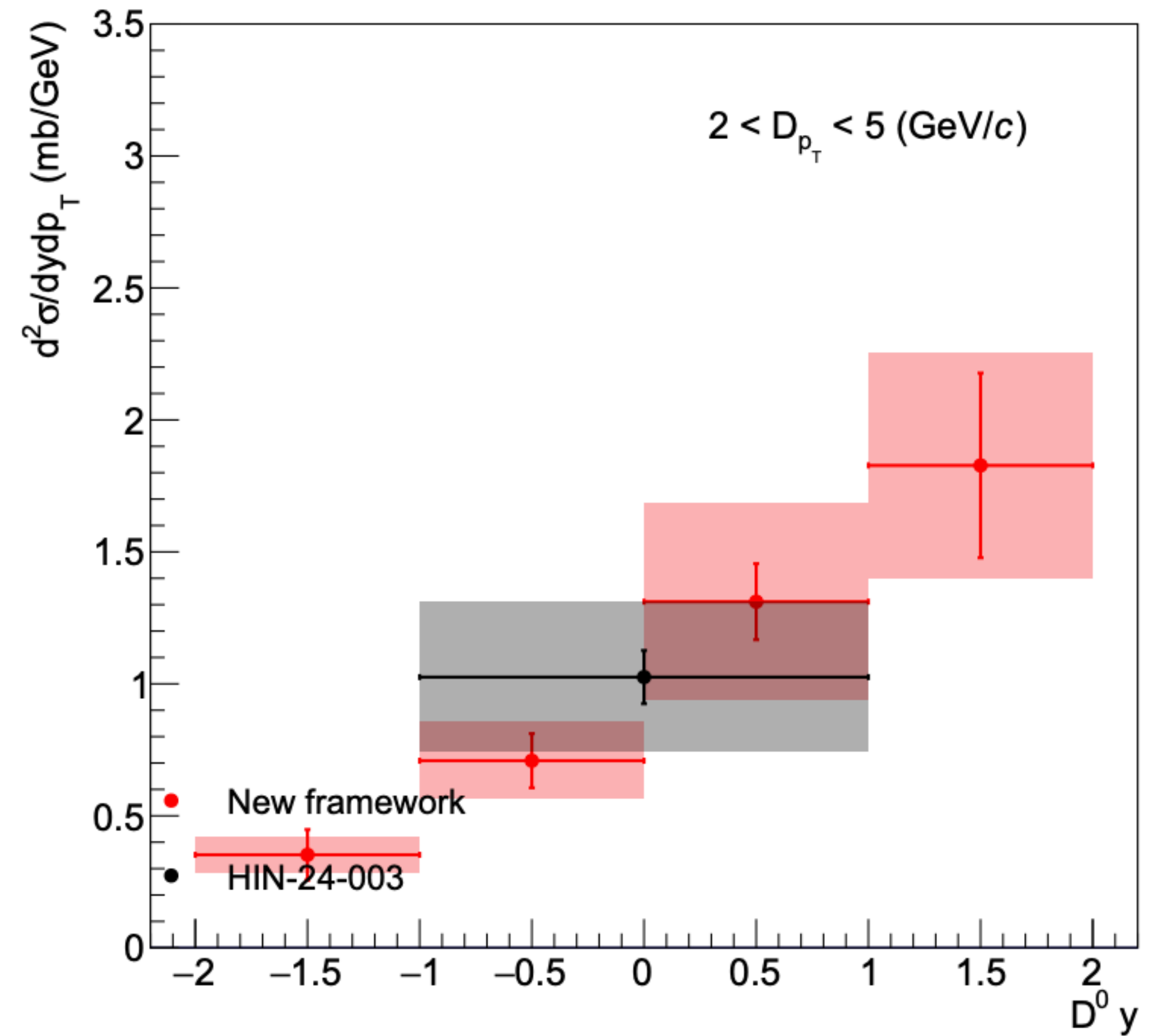
# Backup

# $d^2\sigma/dydp_T$ in $2 \leq D_{pT} \leq 5$ GeV

$\gamma N$



$N\gamma$



\* Details in [analysis note](#)

# Systematic breakdown

$\gamma N$

Source	$p_T$ interval (GeV)			
	2-5			
	$y$ interval			
	-2 - -1	-1 - 0	0 - 1	1 - 2
EvtSel	0.45	0.26	0.33	0.56
HFEMinForGap	7.45	5.47	14.12	17.19
Trk	4.60	4.60	4.60	4.60
BR	0.76	0.76	0.76	0.76
Prompt	5.00	5.00	5.00	5.00
D0SelDsvpv	10.35	4.33	5.31	12.06
D0SelDtrkPt	2.42	4.75	5.91	6.03
D0YieldFixMean	0.35	0.16	0.15	0.16
D0YieldPoly	0.27	10.21	0.20	2.45
D0YieldKKpipi	13.00	13.00	13.00	13.00
Lumi	5.00	5.00	5.00	5.00
Total	20.24	20.41	22.43	26.91

$N\gamma$

Source	$p_T$ interval (GeV)			
	2-5			
	$y$ interval			
	-2 - -1	-1 - 0	0 - 1	1 - 2
EvtSel	0.36	0.23	0.19	0.28
HFEMinForGap	10.22	6.32	5.59	10.77
Trk	4.60	4.60	4.60	4.60
BR	0.76	0.76	0.76	0.76
Prompt	5.00	5.00	5.00	5.00
D0SelDsvpv	1.79	7.01	3.88	9.65
D0SelDtrkPt	3.58	9.03	19.30	6.54
D0YieldFixMean	0.31	0.06	0.14	0.02
D0YieldPoly	3.52	2.31	11.96	7.36
D0YieldKKpipi	13.00	13.00	13.00	13.00
Lumi	5.00	5.00	5.00	5.00
Total	19.33	20.42	28.33	23.38

\* Details in [analysis note](#)