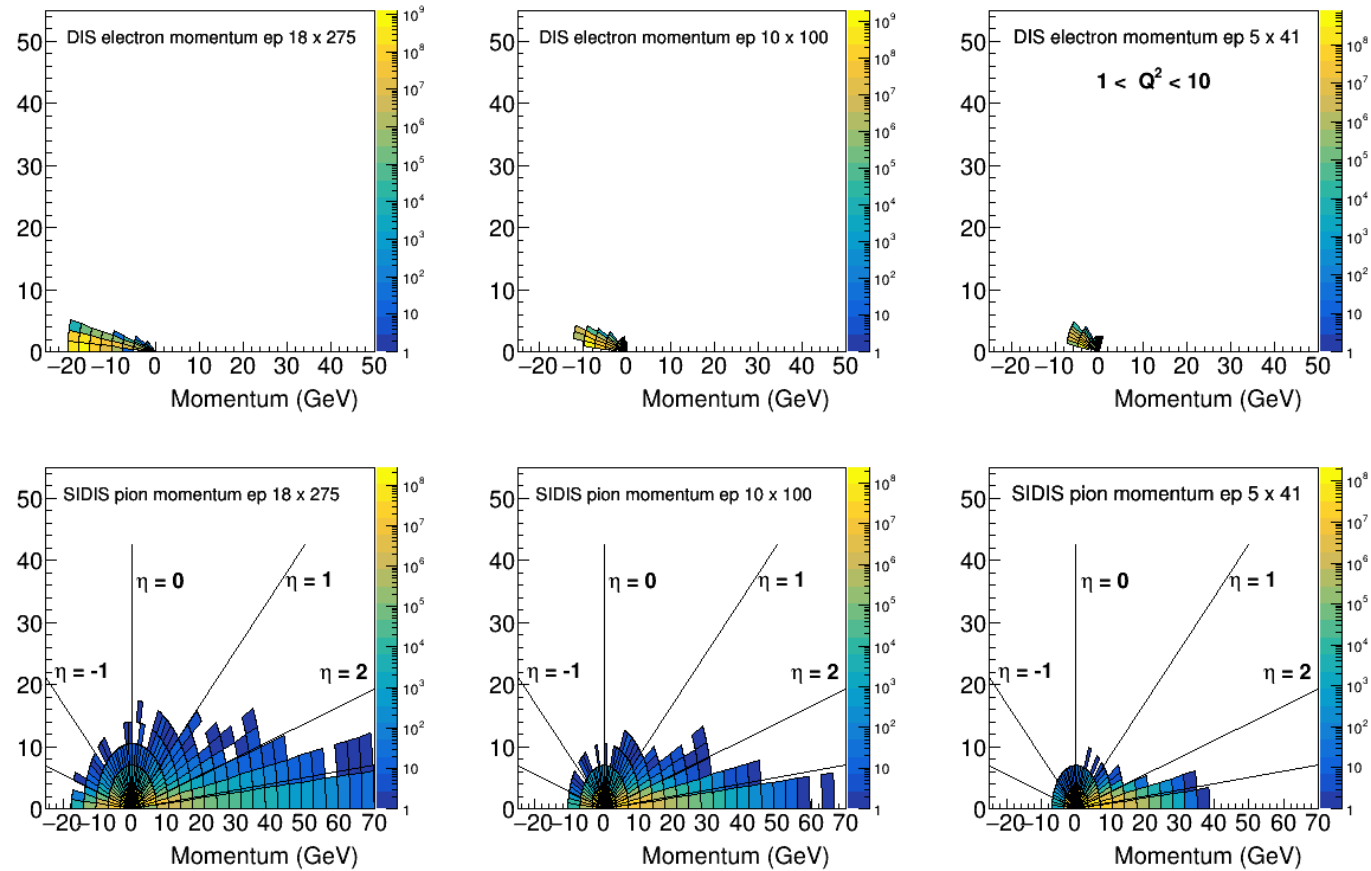
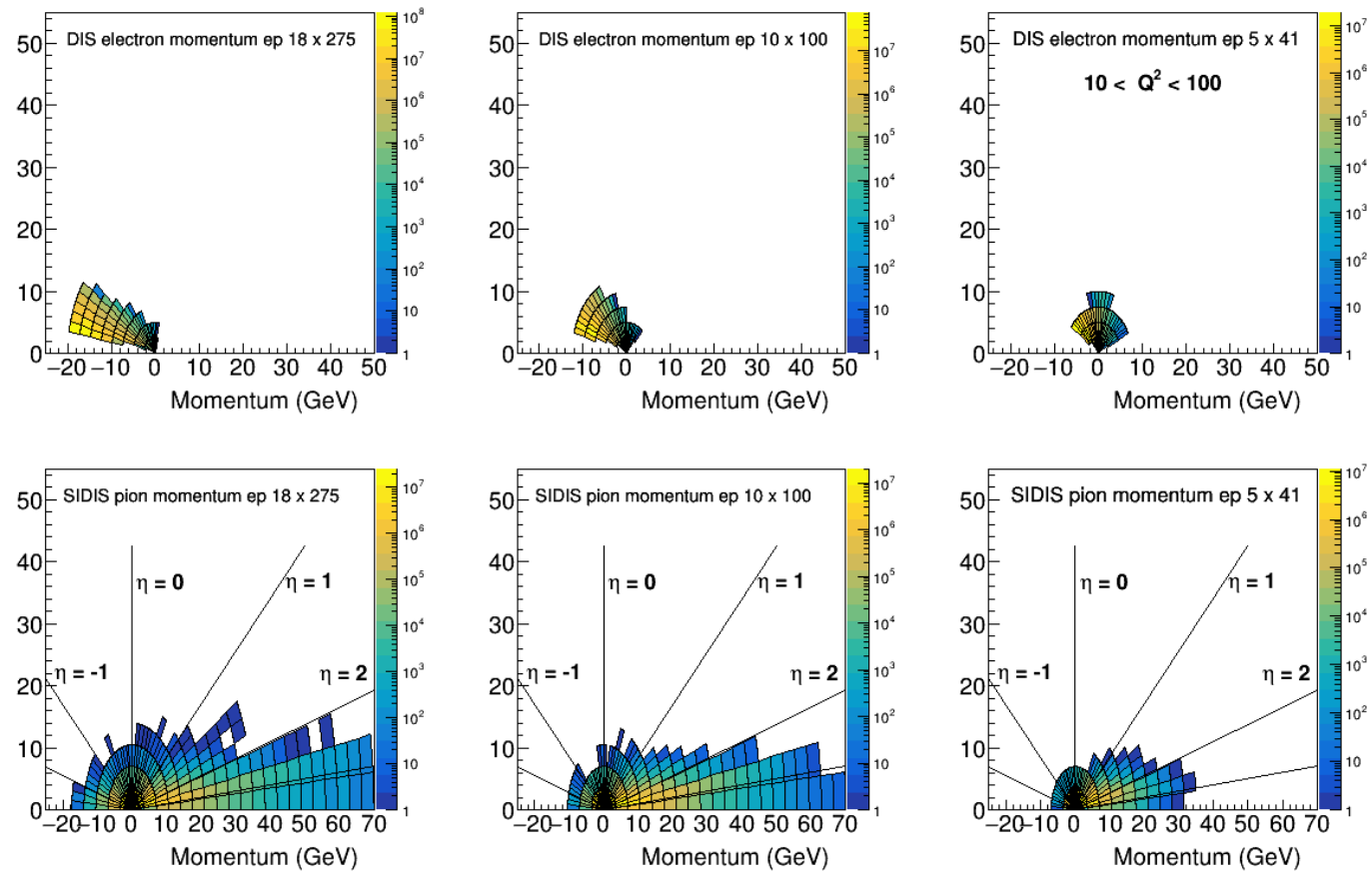


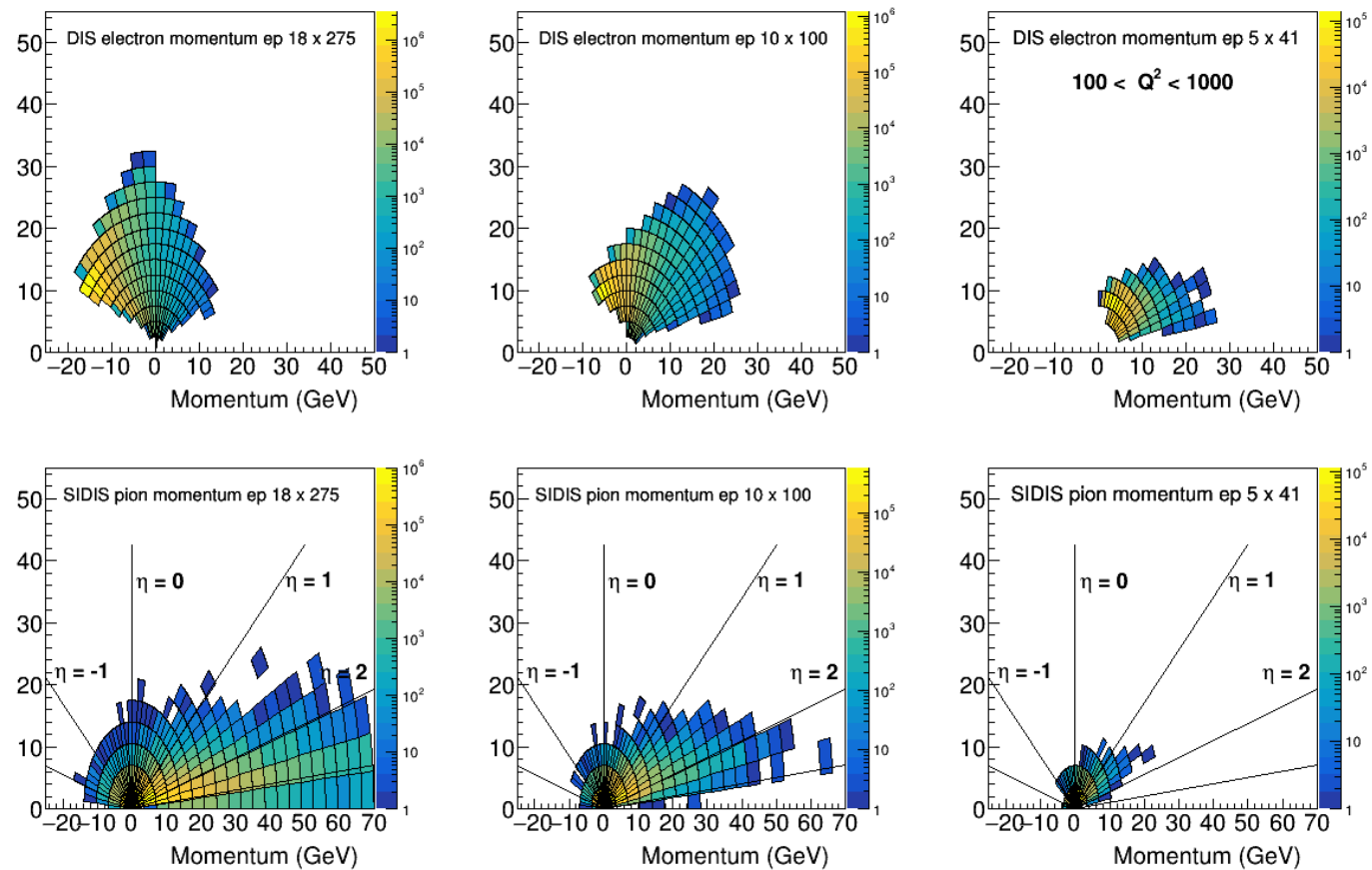
Acceptance studies

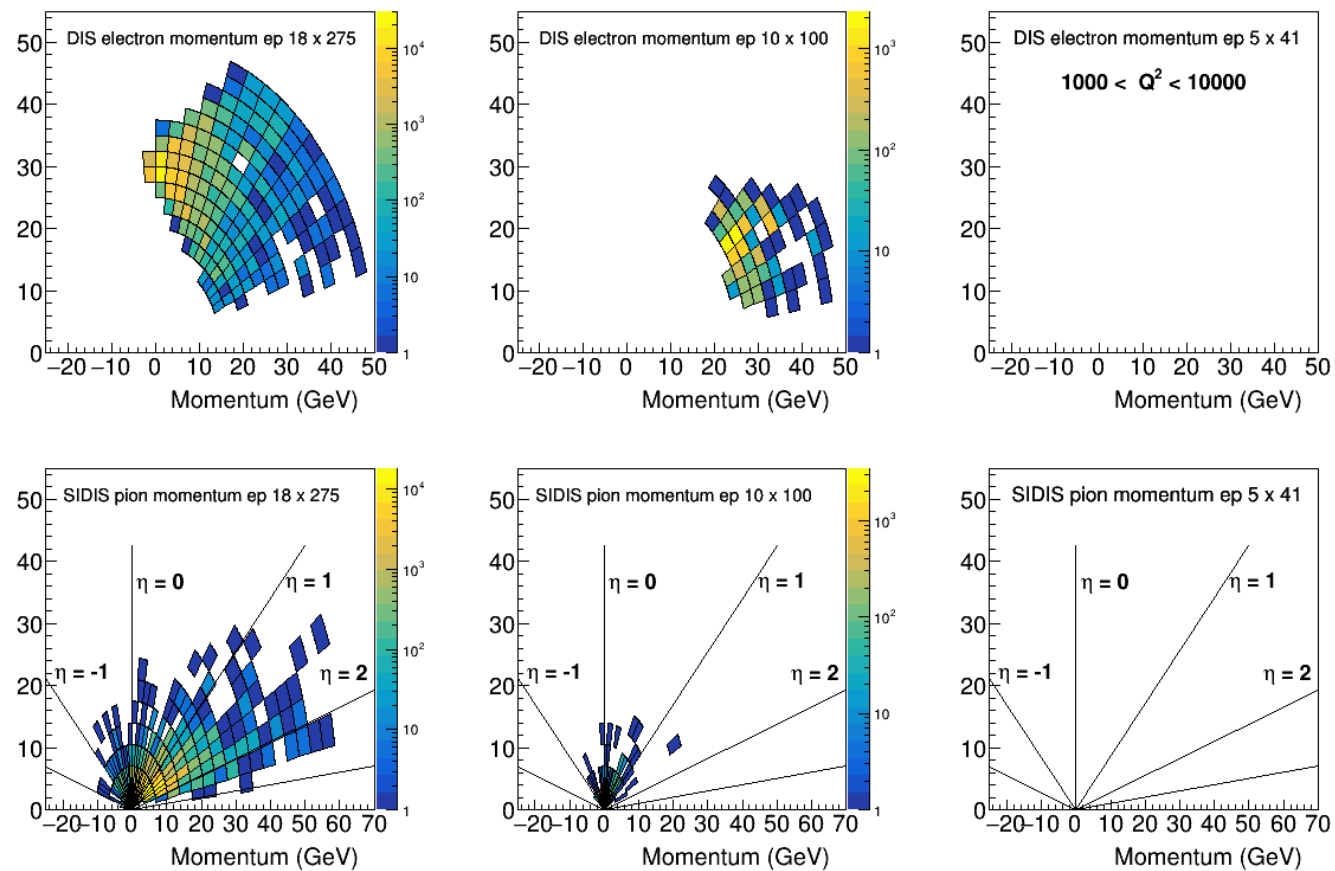
Ralf Seidl (RIKEN)

Estimated yields for 10fb^{-1}









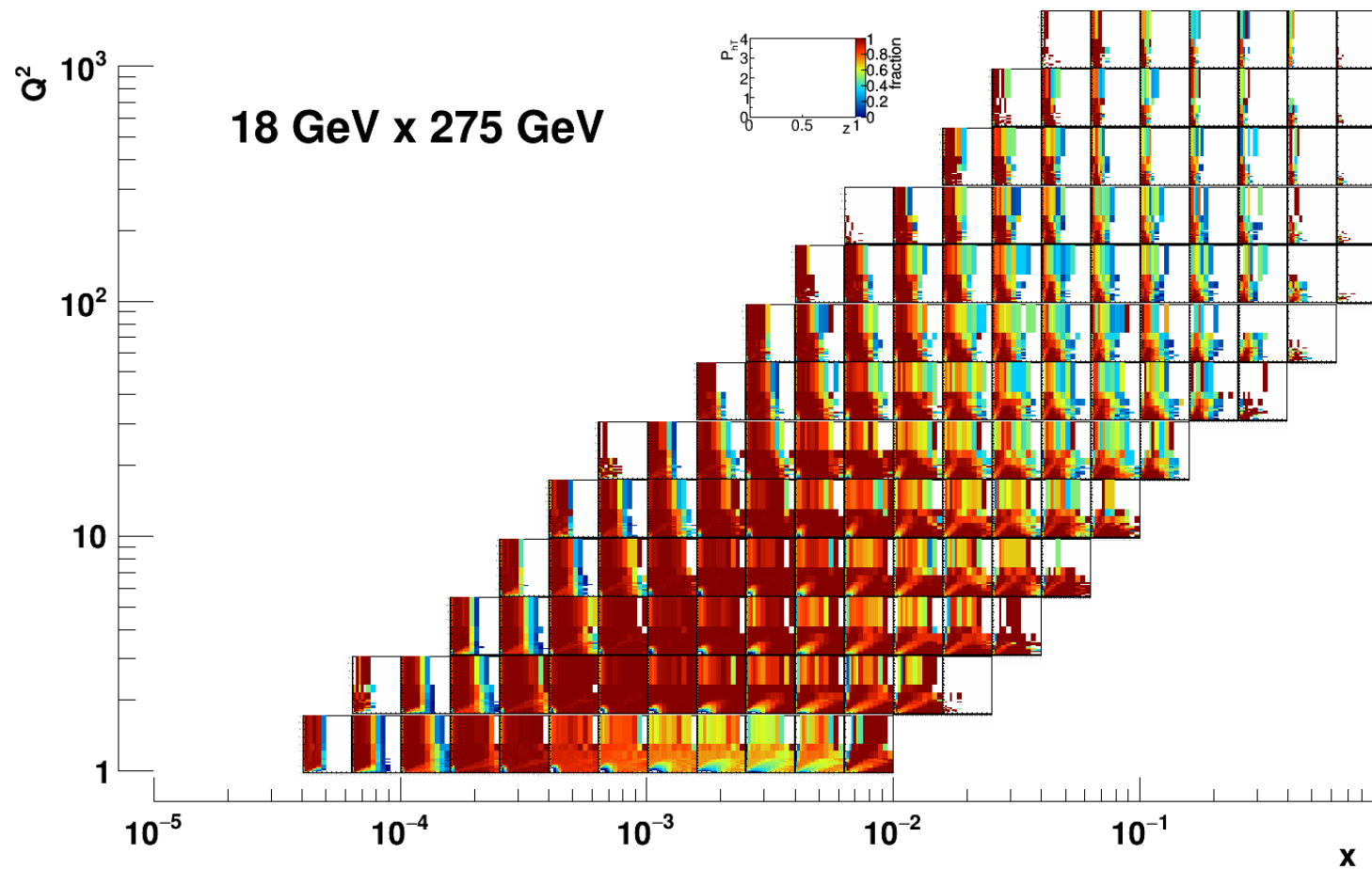
Different PID ranges tested for 4D acceptance

Matrix	$\pi/K/p$	SIDIS	$\pi/K/p$	Pi0 high p	π/K	p	SIDIS request	$\pi/K/p$
-3.5 - -1.0	0.2 - 7	-3.5 - -1.0	0.2 - 7	-3.5 - -1.0	0.2 - 5	0.2 - 8	-3.5 - -1.0	0.2 - 7
-1.0 - 1.0	0.2 - 5	-1.0 - 1.0	0.2 - 8	-1.0 - 1.0	0.2 - 4	0.2 - 4	-1.0 - 1.0	0.2 - 8
1.0 - 2.0	0.2 - 8	1.0 - 2.0	0.2 - 10	1.0 - 2.0	0.2 - 100	0.2 - 100	1.0 - 2.0	0.2 - 20
2.0 - 3.0	0.5 - 20	2.0 - 3.0	0.5 - 20	2.0 - 3.0	0.5 - 100	3.0 - 100	2.0 - 3.0	0.5 - 30
3.0 - 3.5	0.5 - 45	3.0 - 3.5	0.5 - 45	3.0 - 3.5	0.5 - 100	3.0 - 100	3.0 - 3.5	0.5 - 45

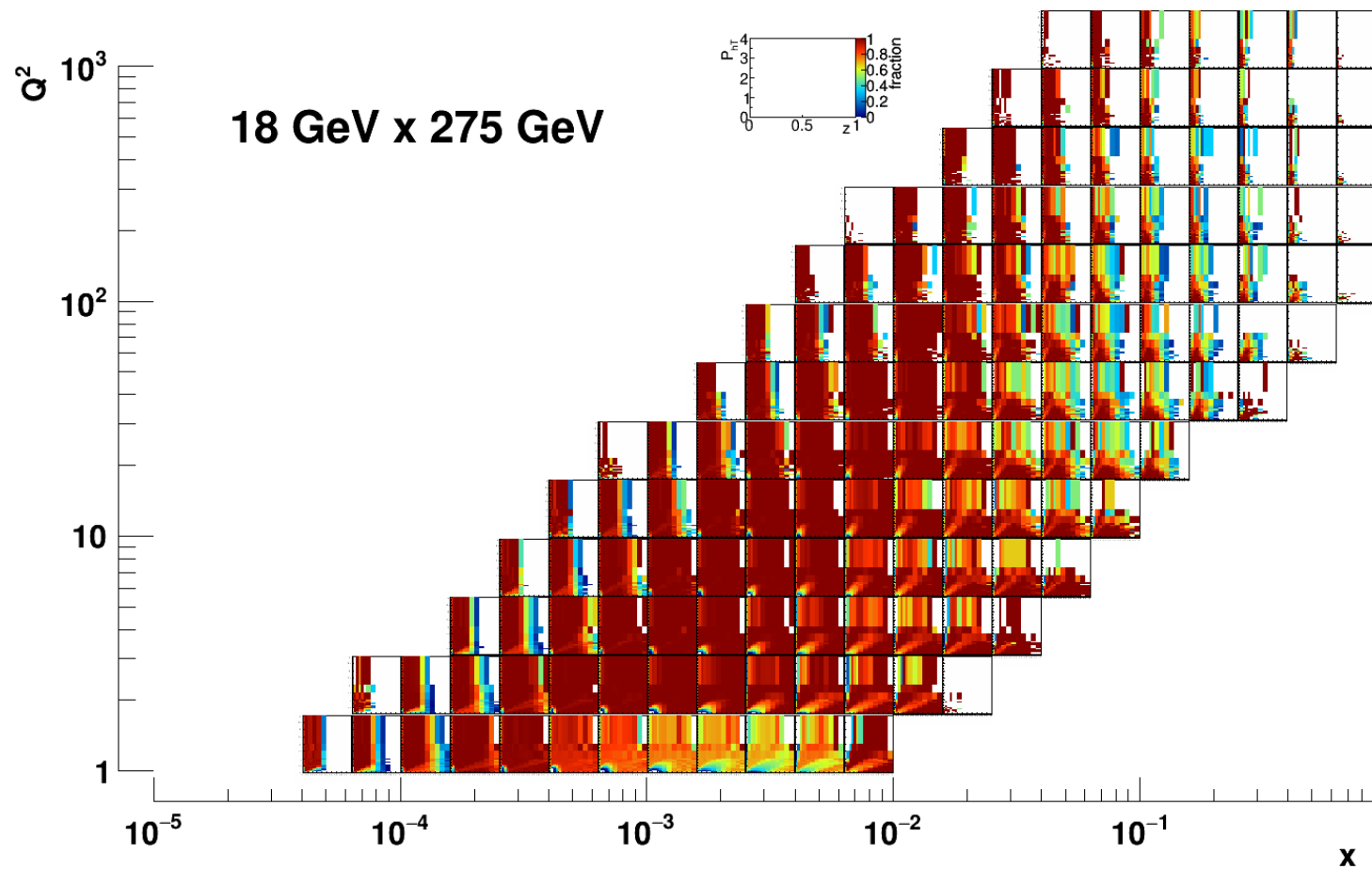
Old	π/K	p
-3.5 - -1.0	0.2 - 5	0.2 - 8
-1.0 - 1.0	0.2 - 4	0.2 - 4
1.0 - 2.0	0.2 - 50	0.2 - 50
2.0 - 3.0	0.5 - 50	3.0 - 50
3.0 - 3.5	0.5 - 50	3.0 - 50

- Compare max momentum requirements for
 - Old (used by Charlotte et al for SIDIS PDF/FF paper)
 - Official Detector Matrix (by DWG/conveners)
 - SIDIS group preference for central detectors
 - Pi0 high p (2-3.5 Old 50 \rightarrow 100 GeV)
 - Official SIDIS group request
- Color coding (yellow higher than Matrix, red lower)

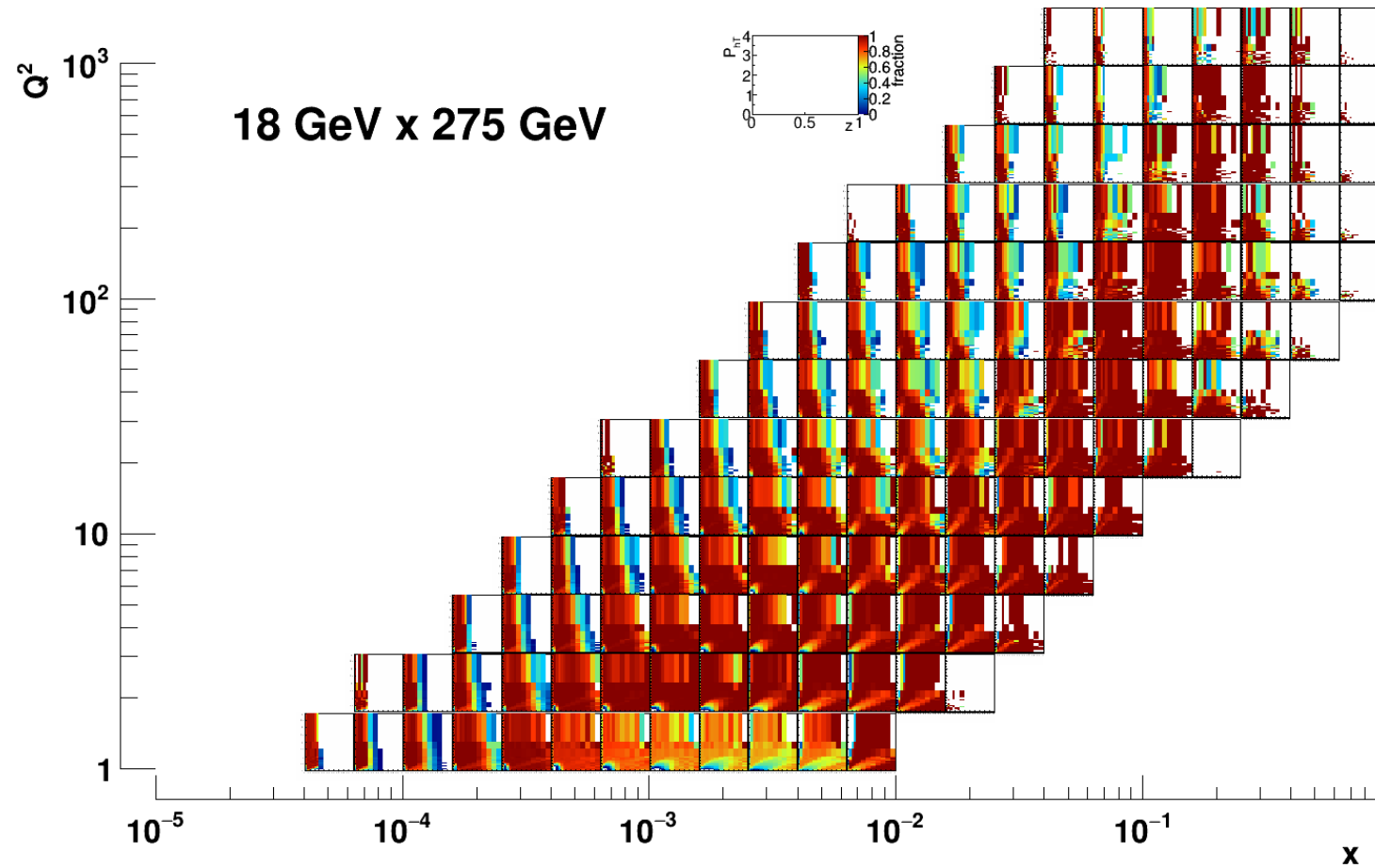
4D ratios (PID acc/perfect): Matrix



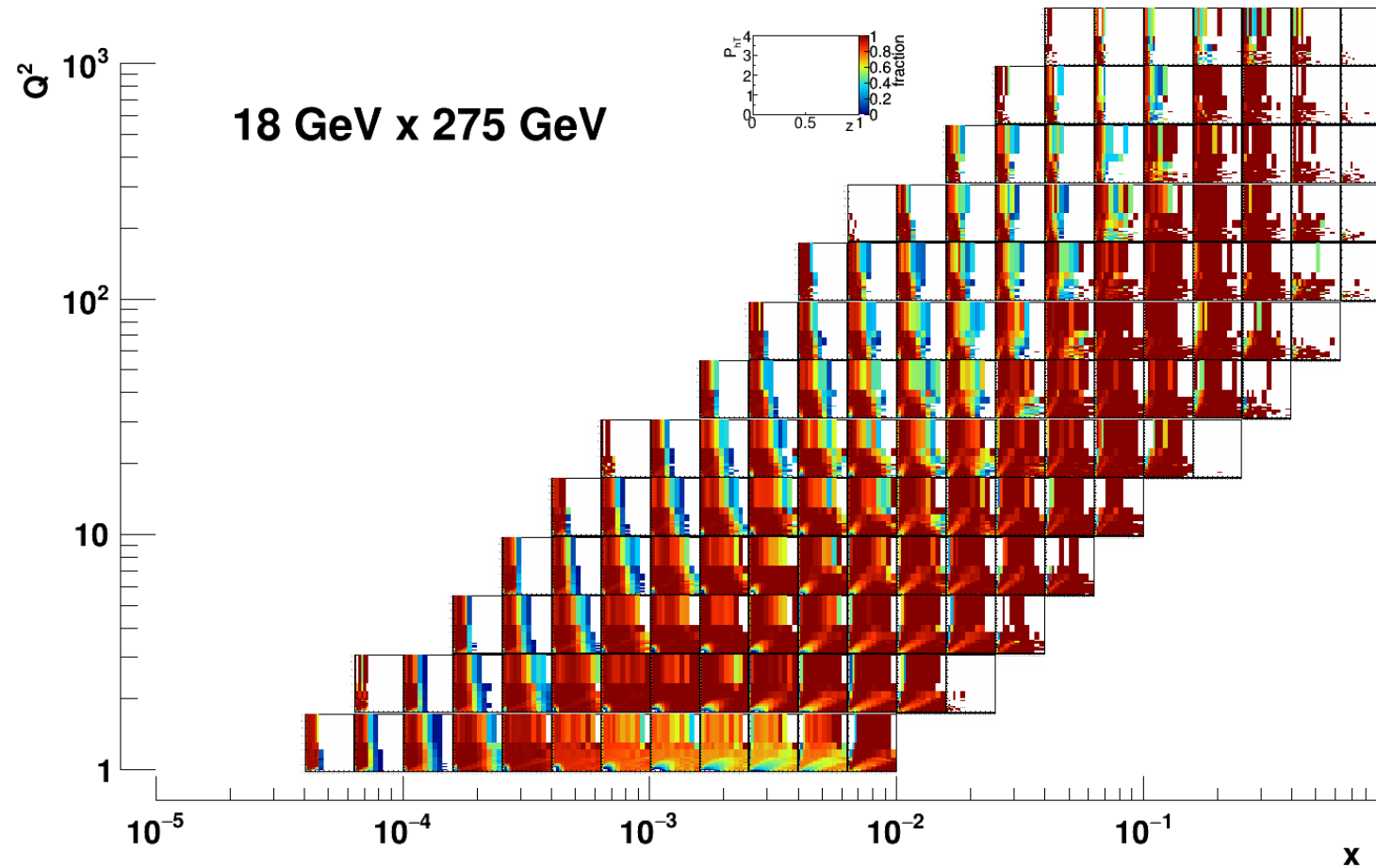
4D ratios (PID acc/perfect): SIDIS



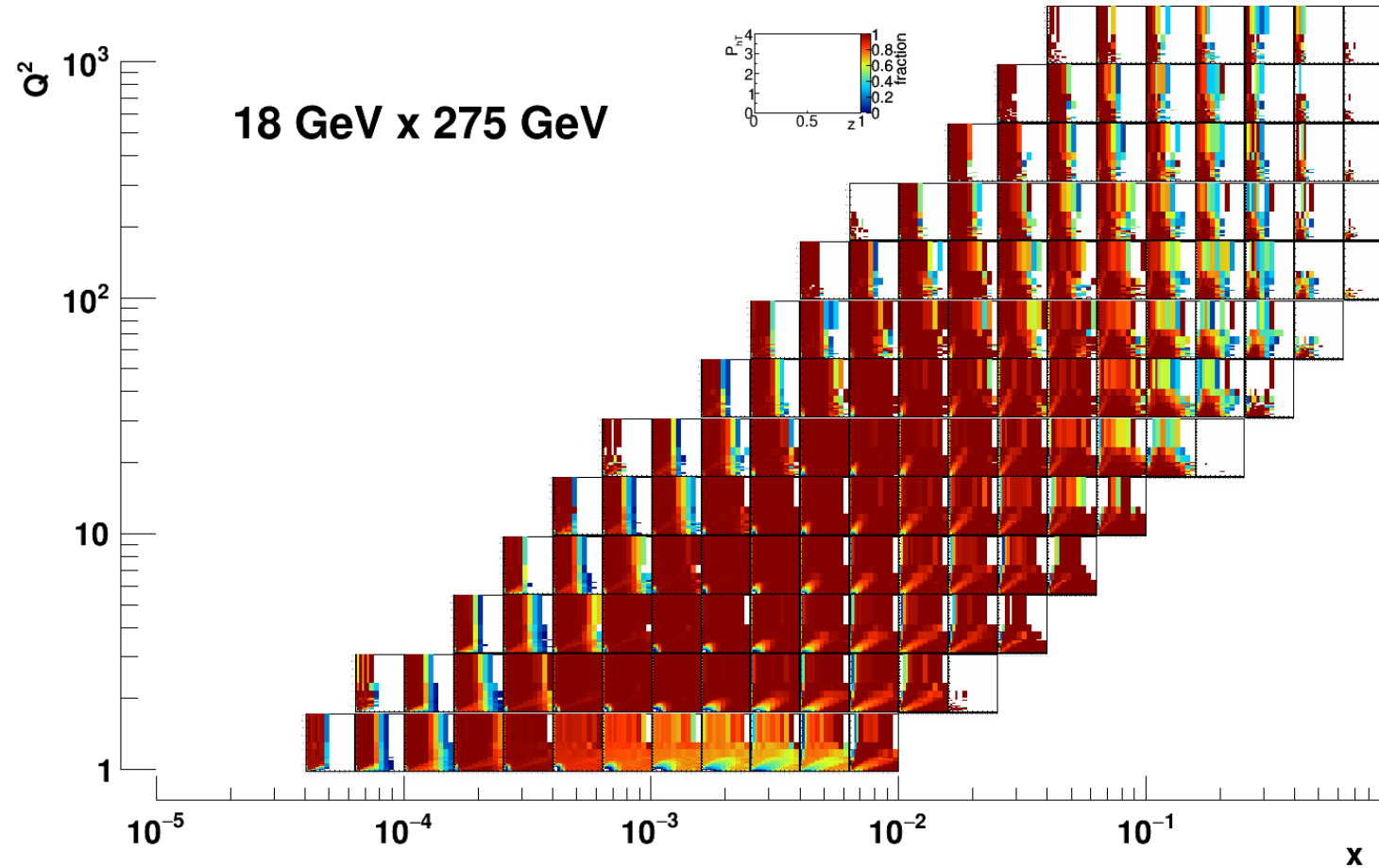
Old



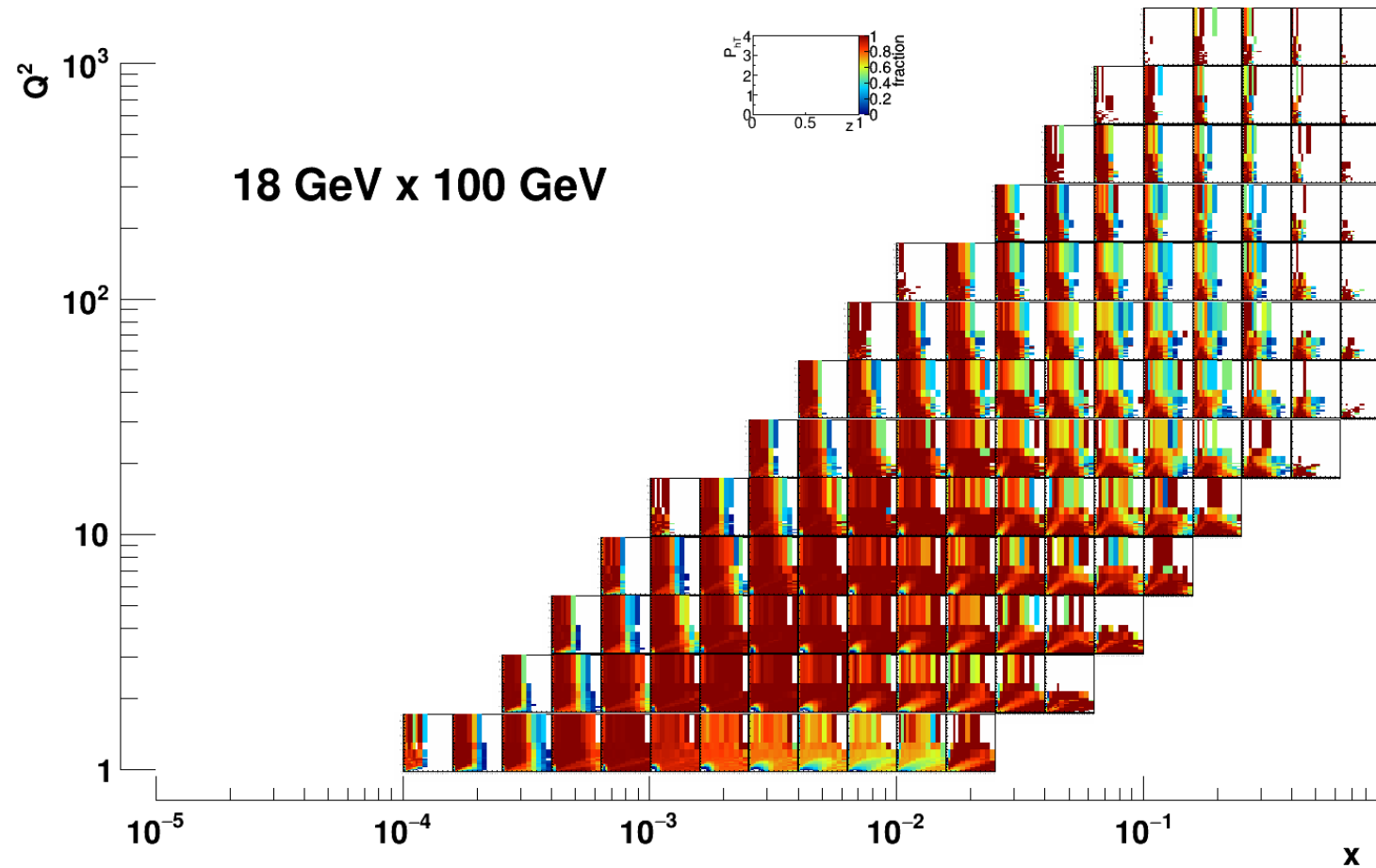
Very high forward P



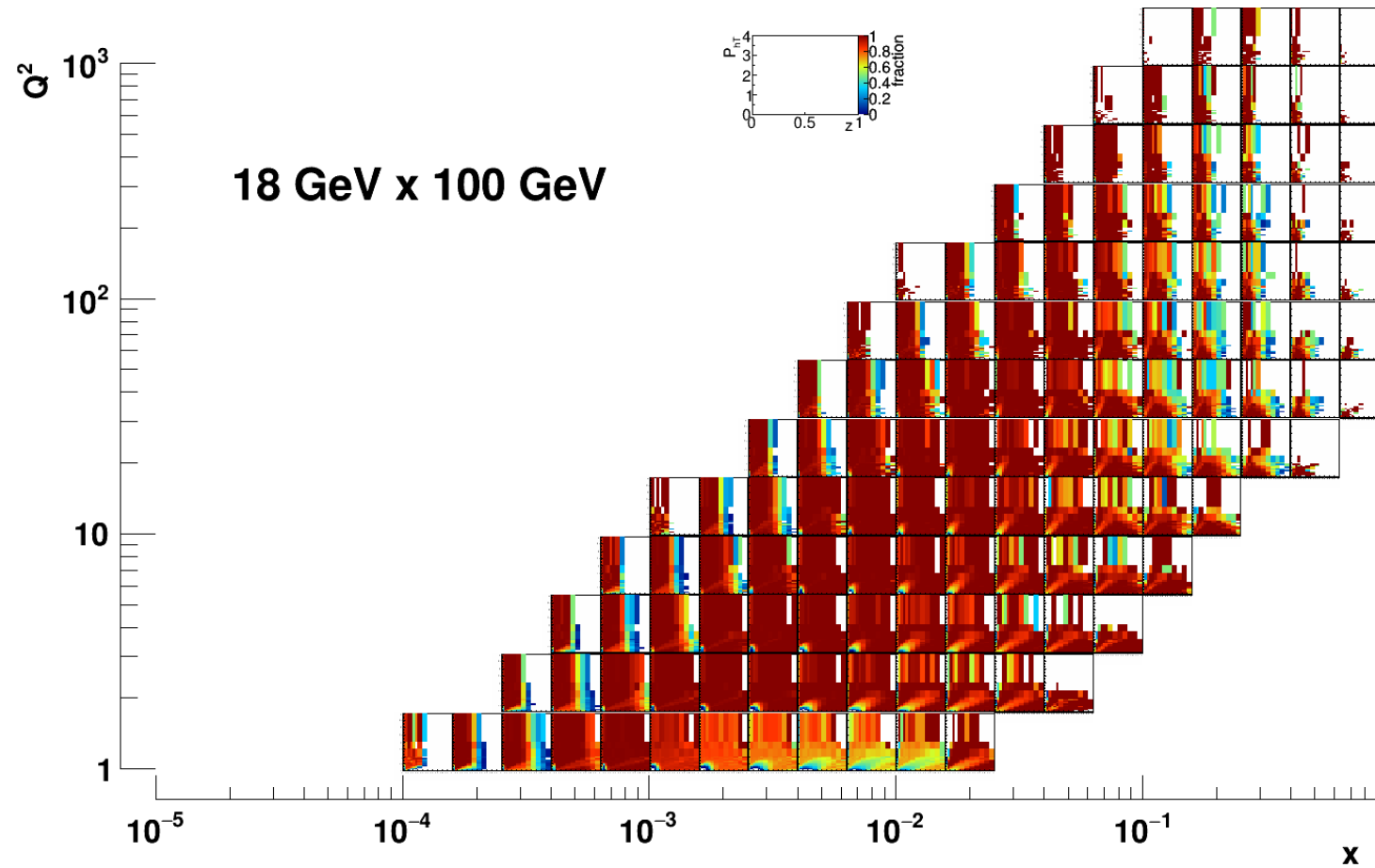
SIDIS Request



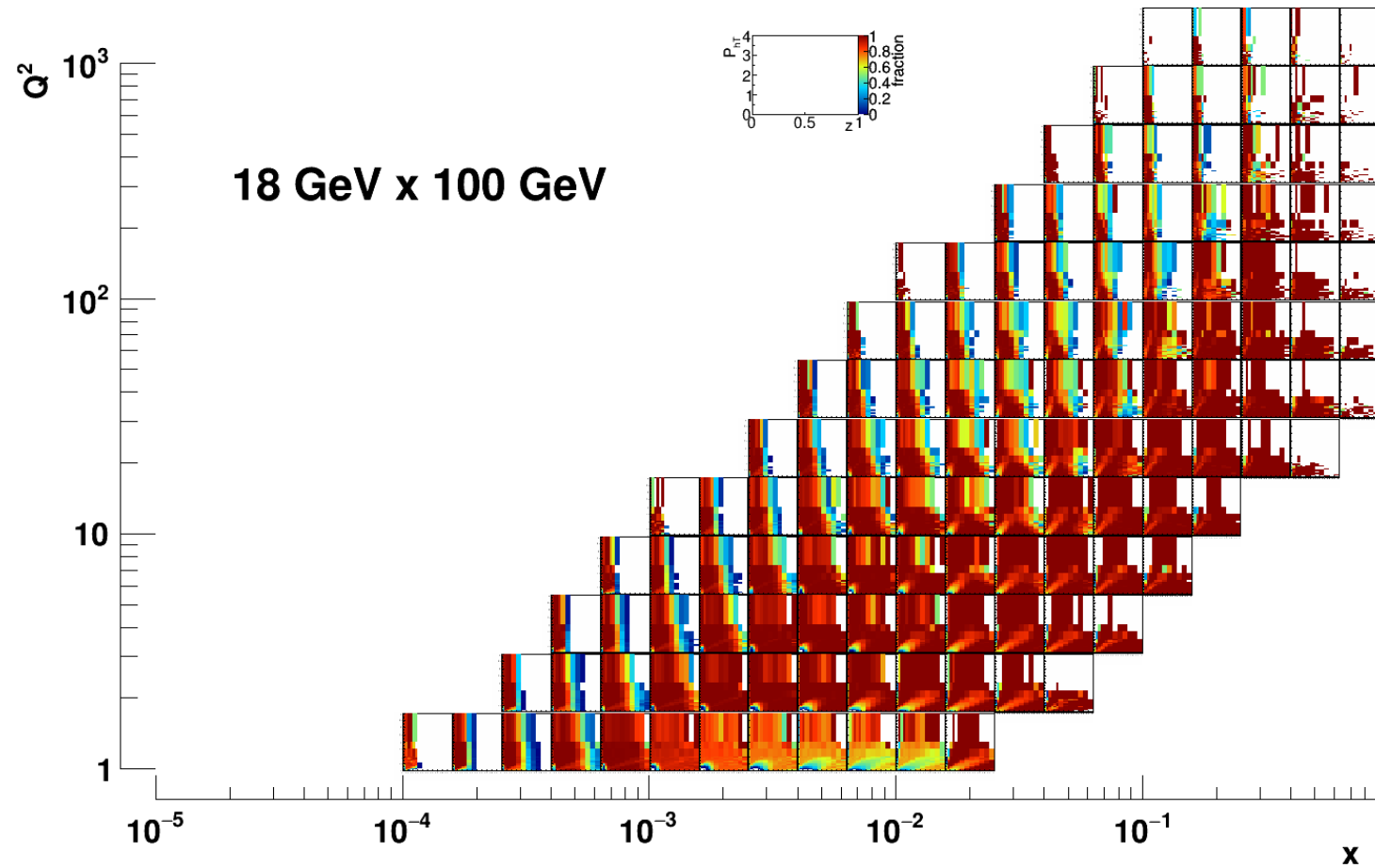
Matrix



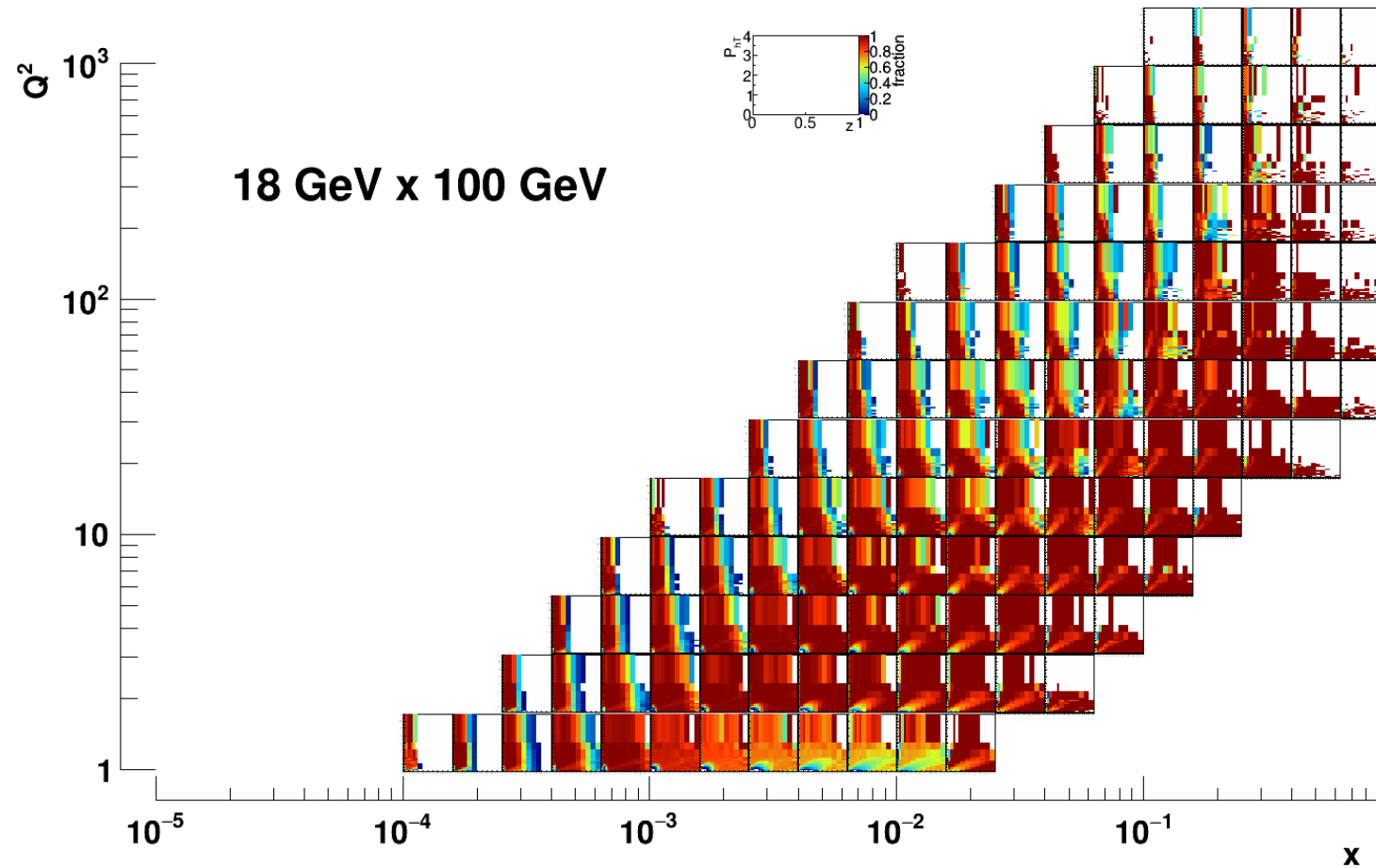
SIDIS



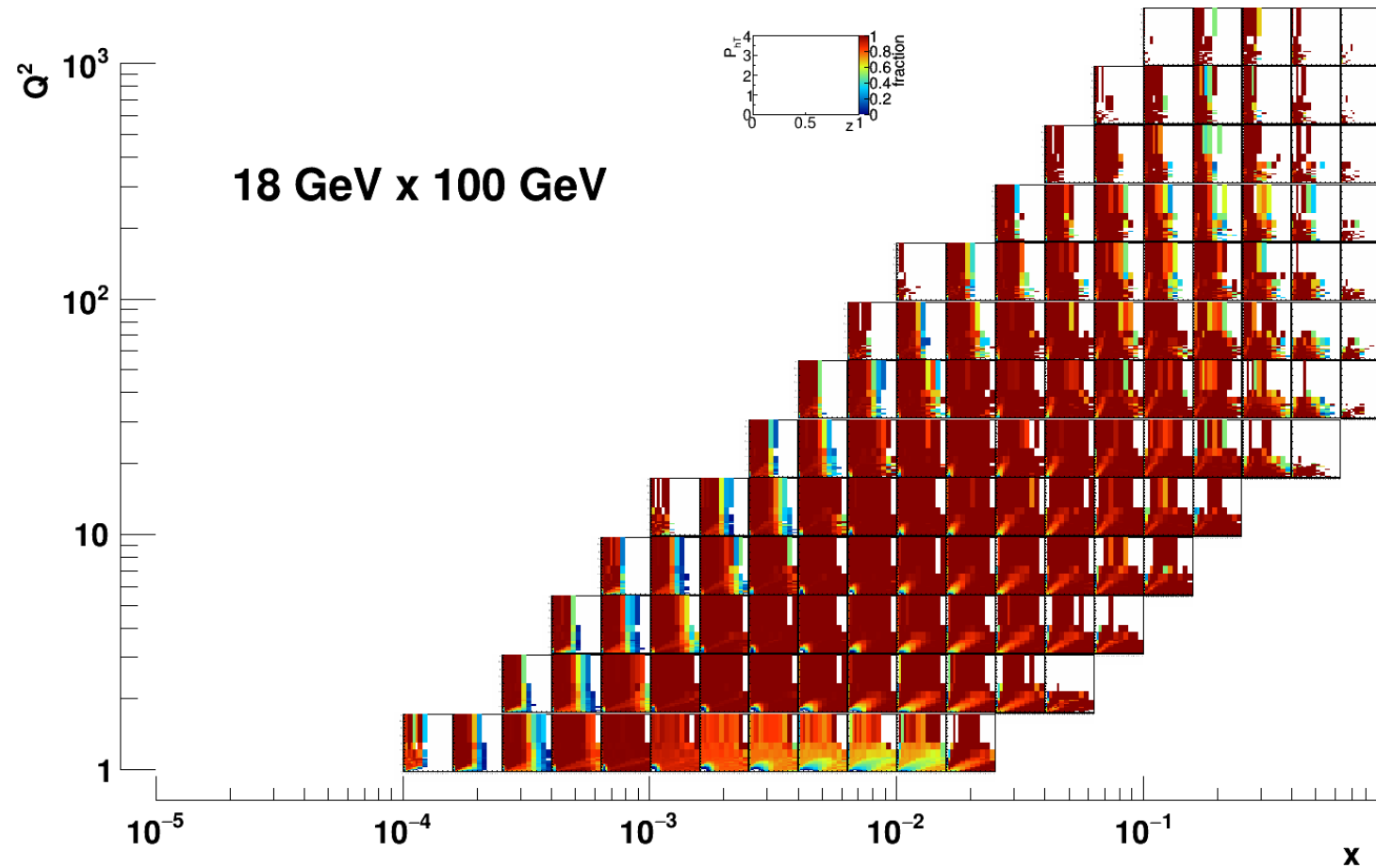
old



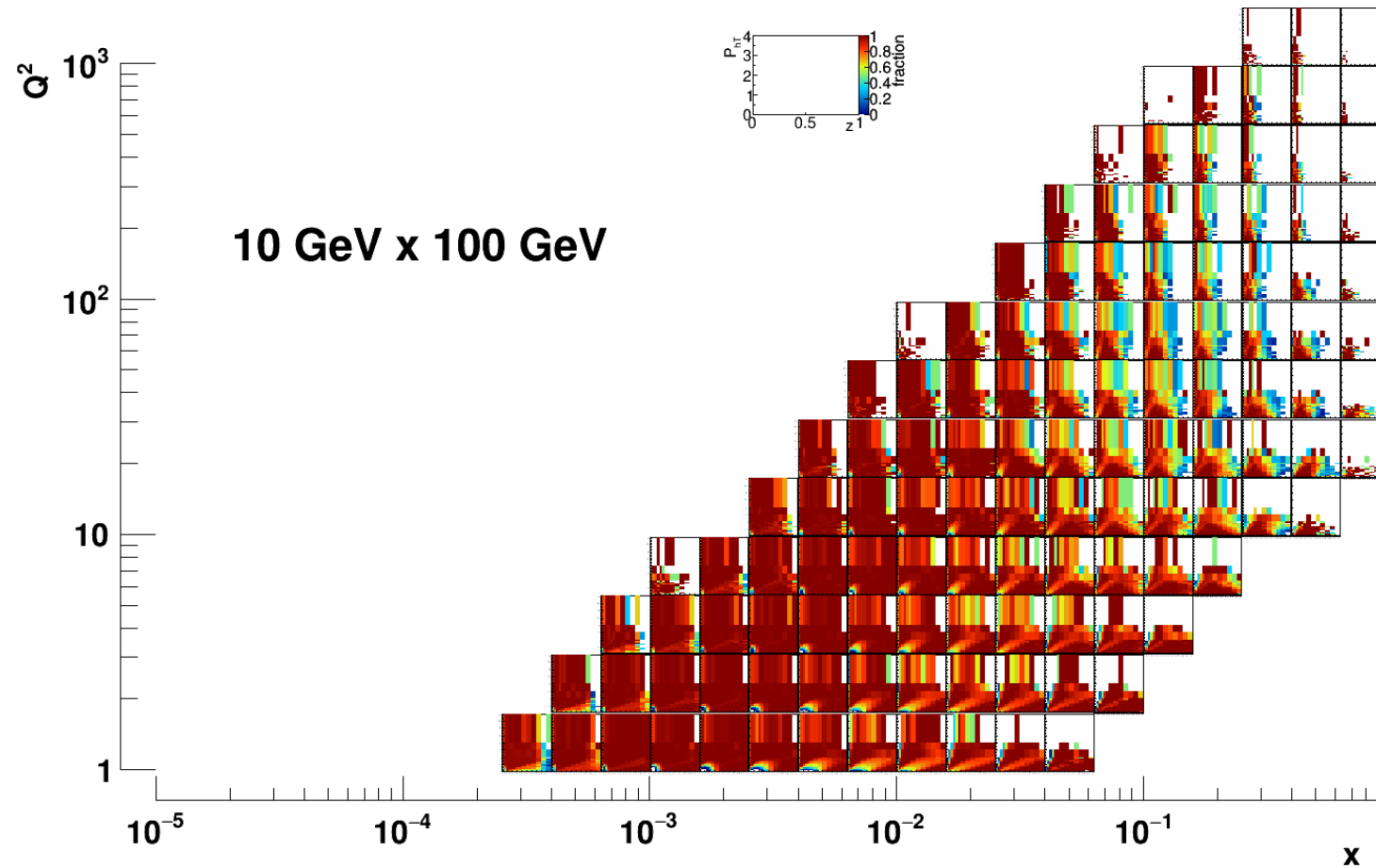
Very high p



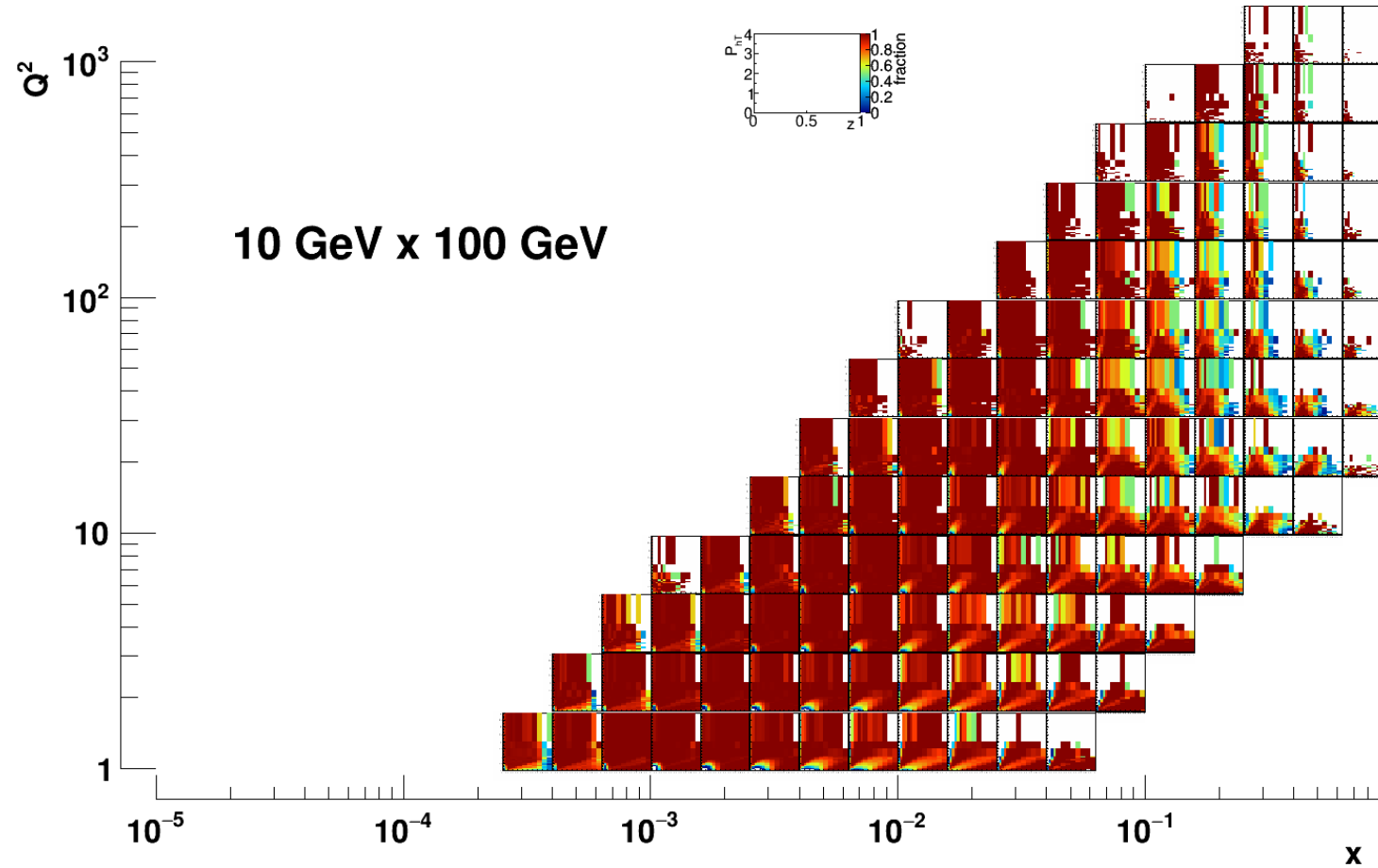
SIDIS request



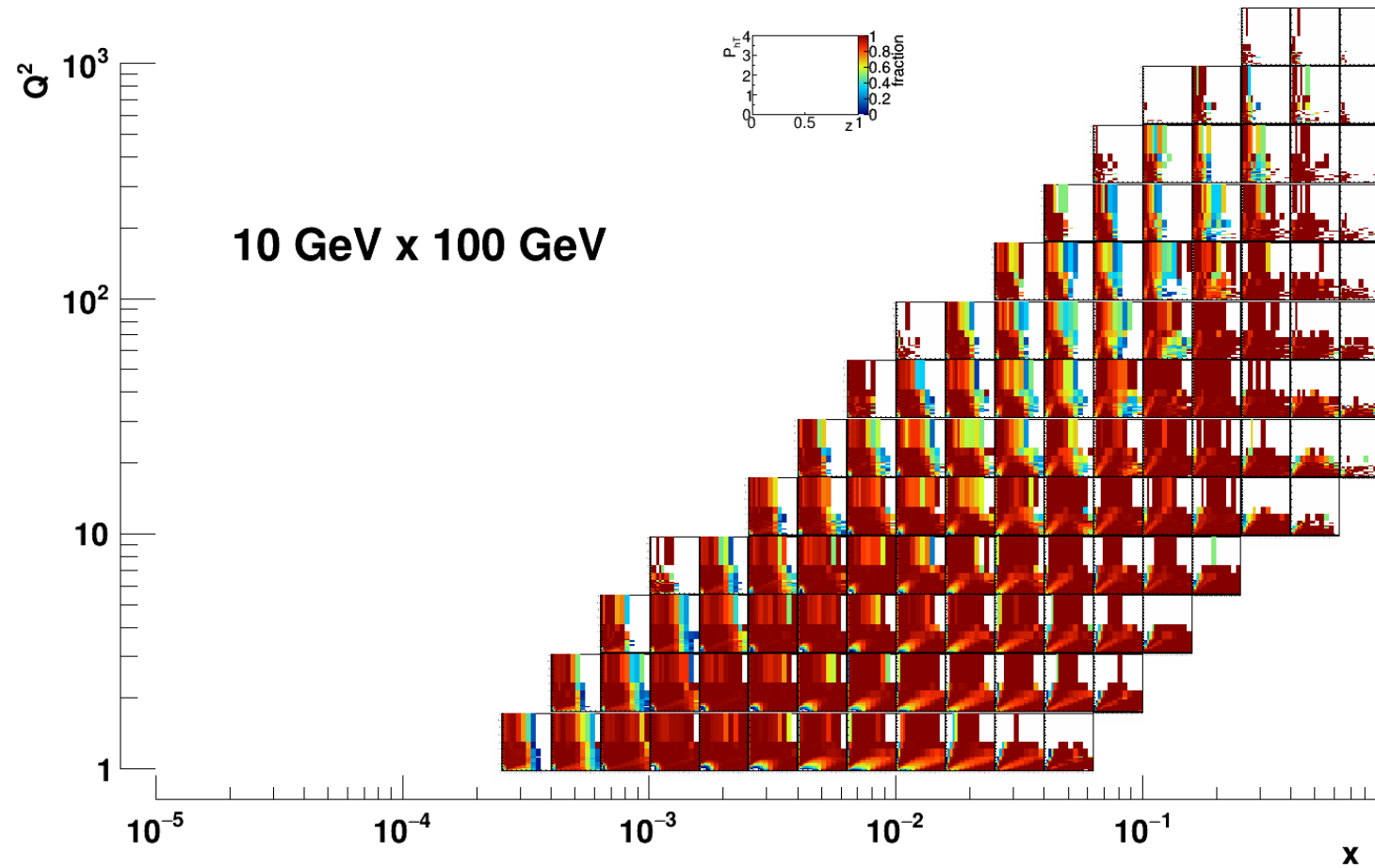
Matrix



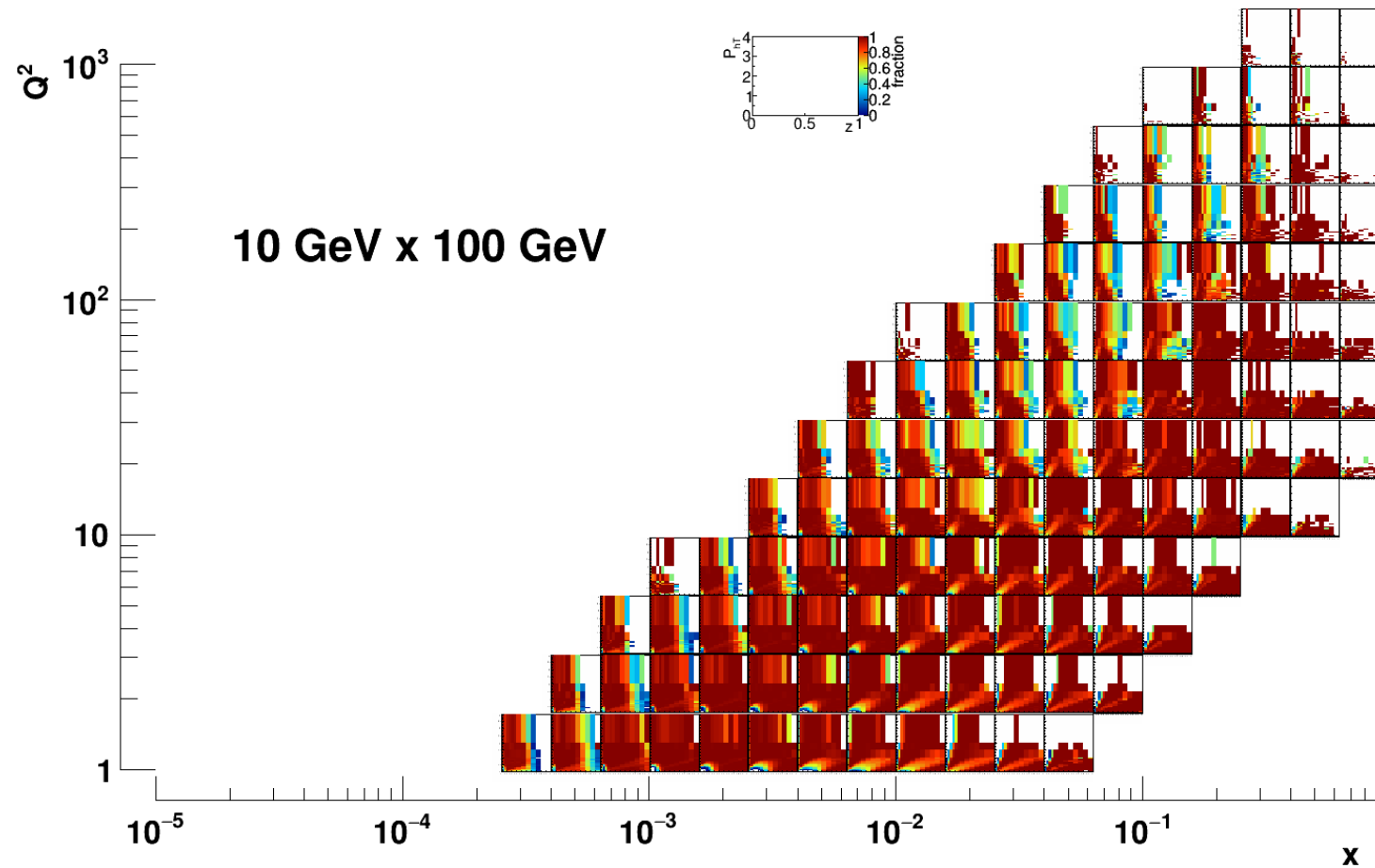
SIDIS



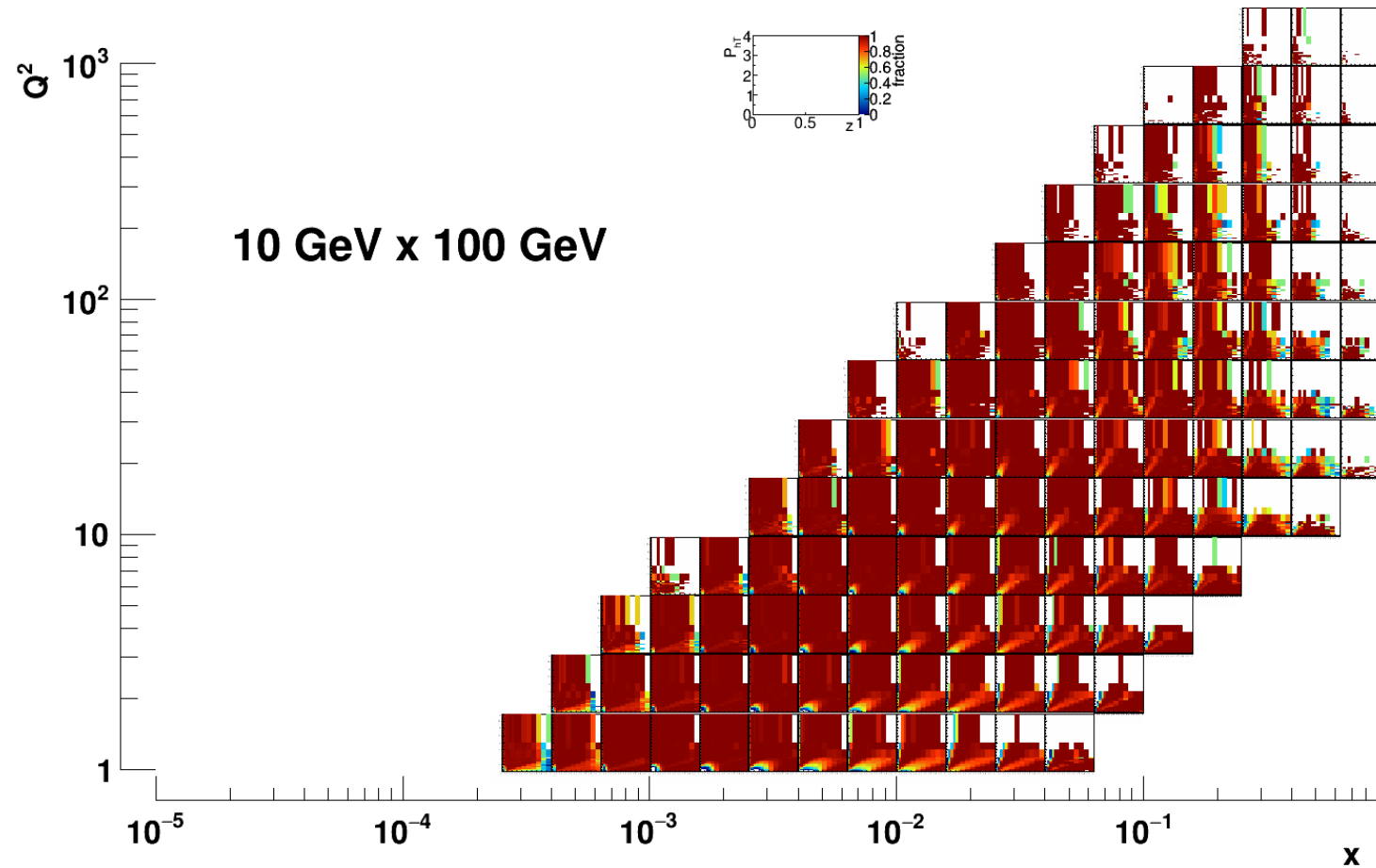
old



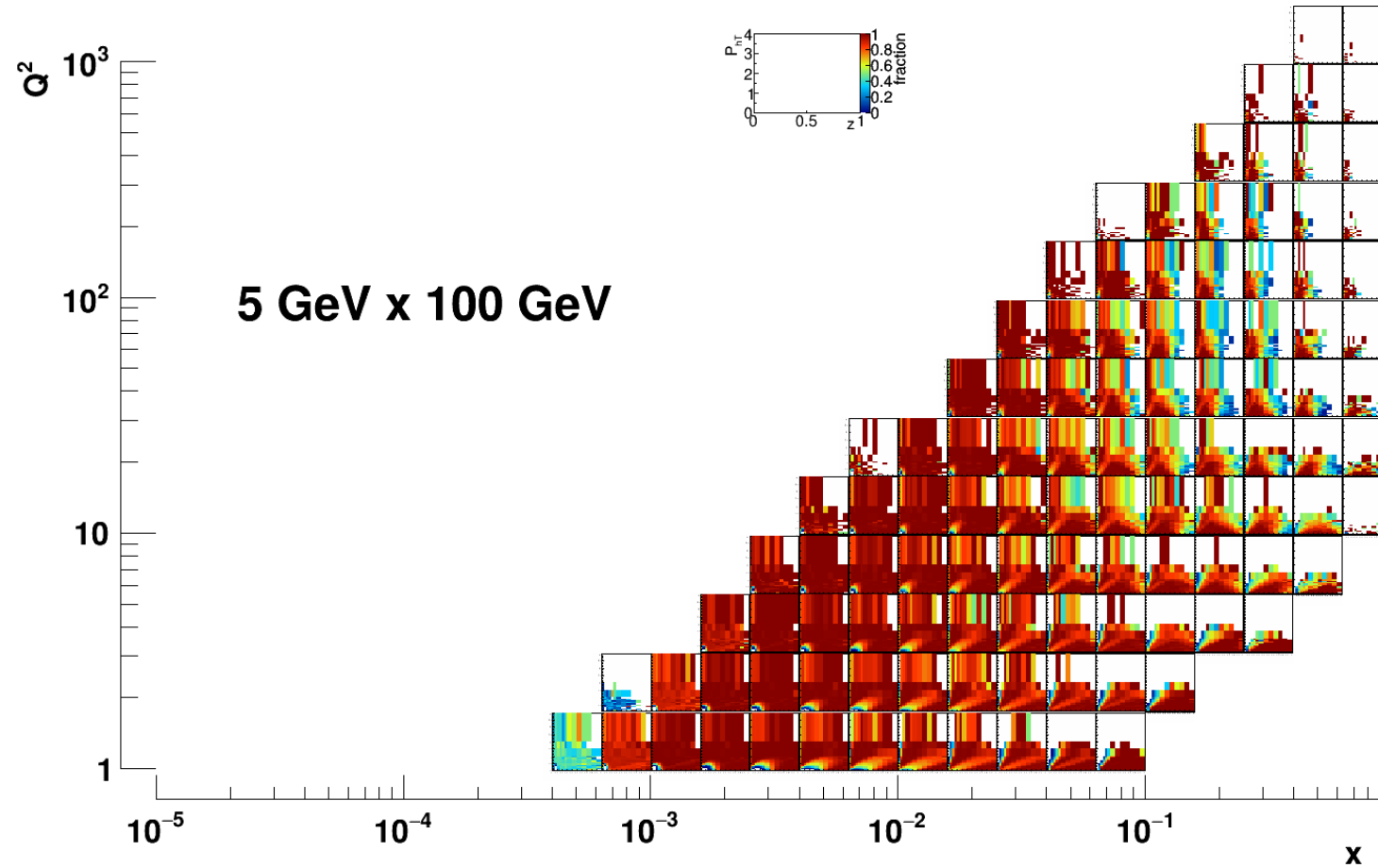
Very high p



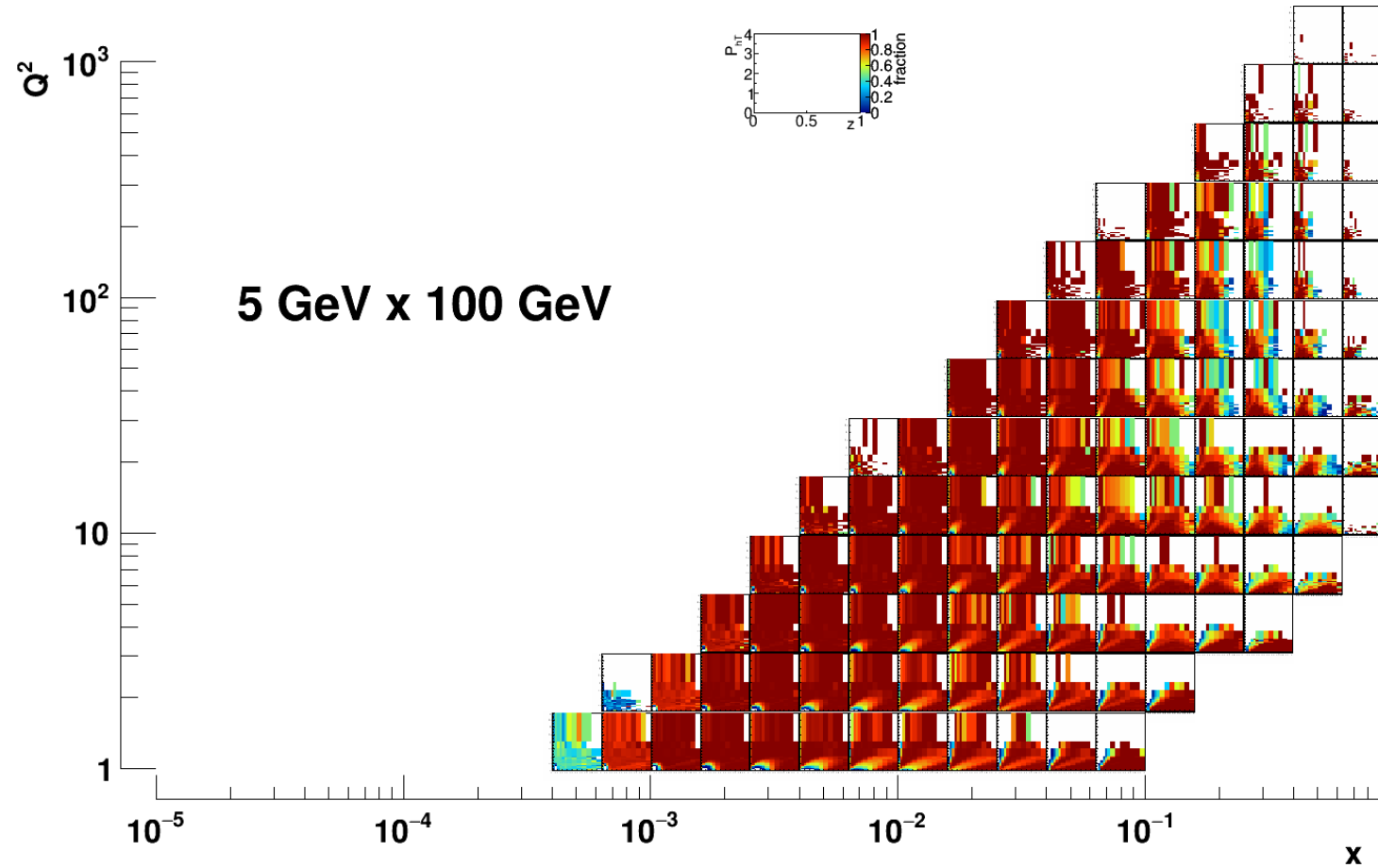
SIDIS request



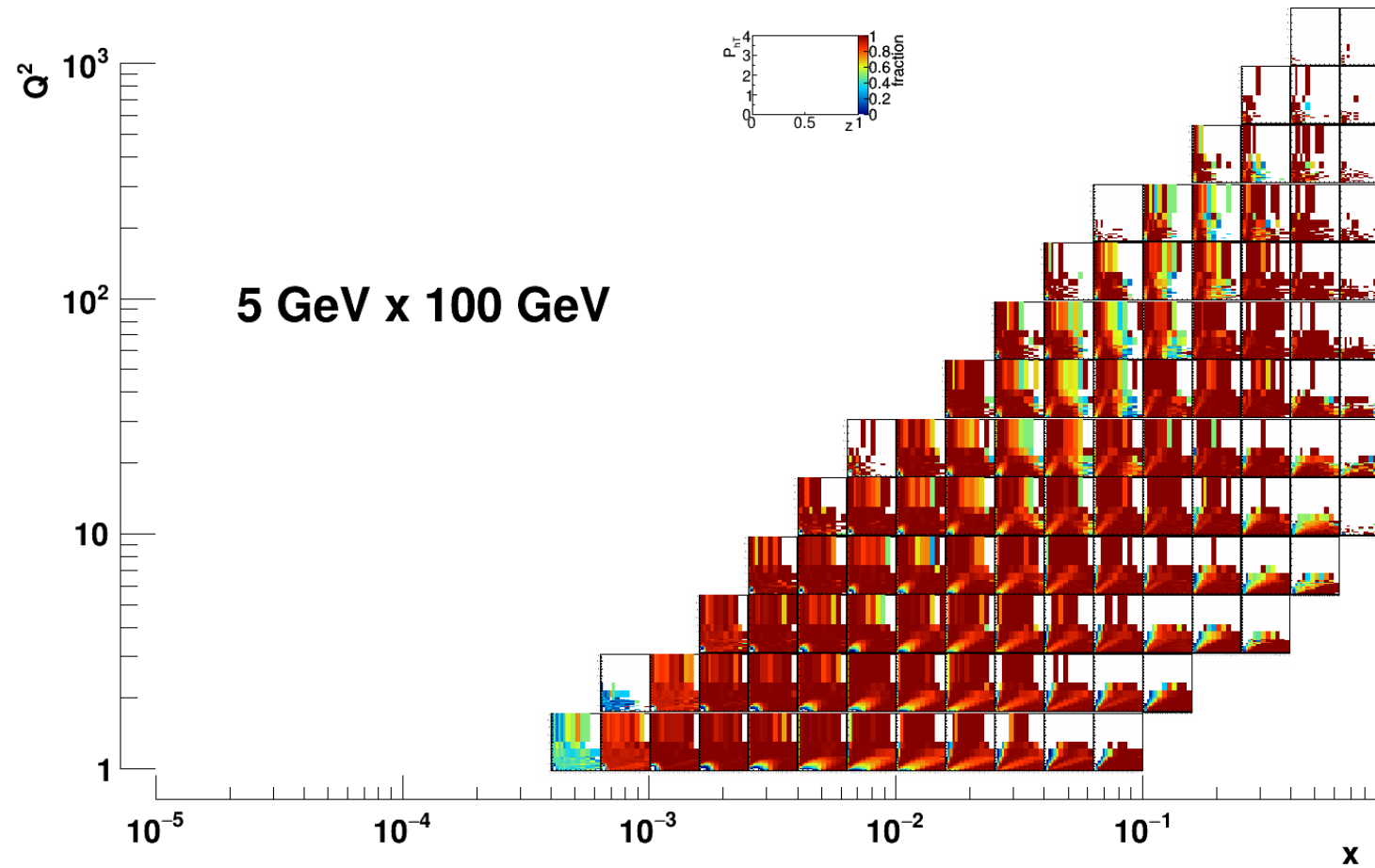
Matrix



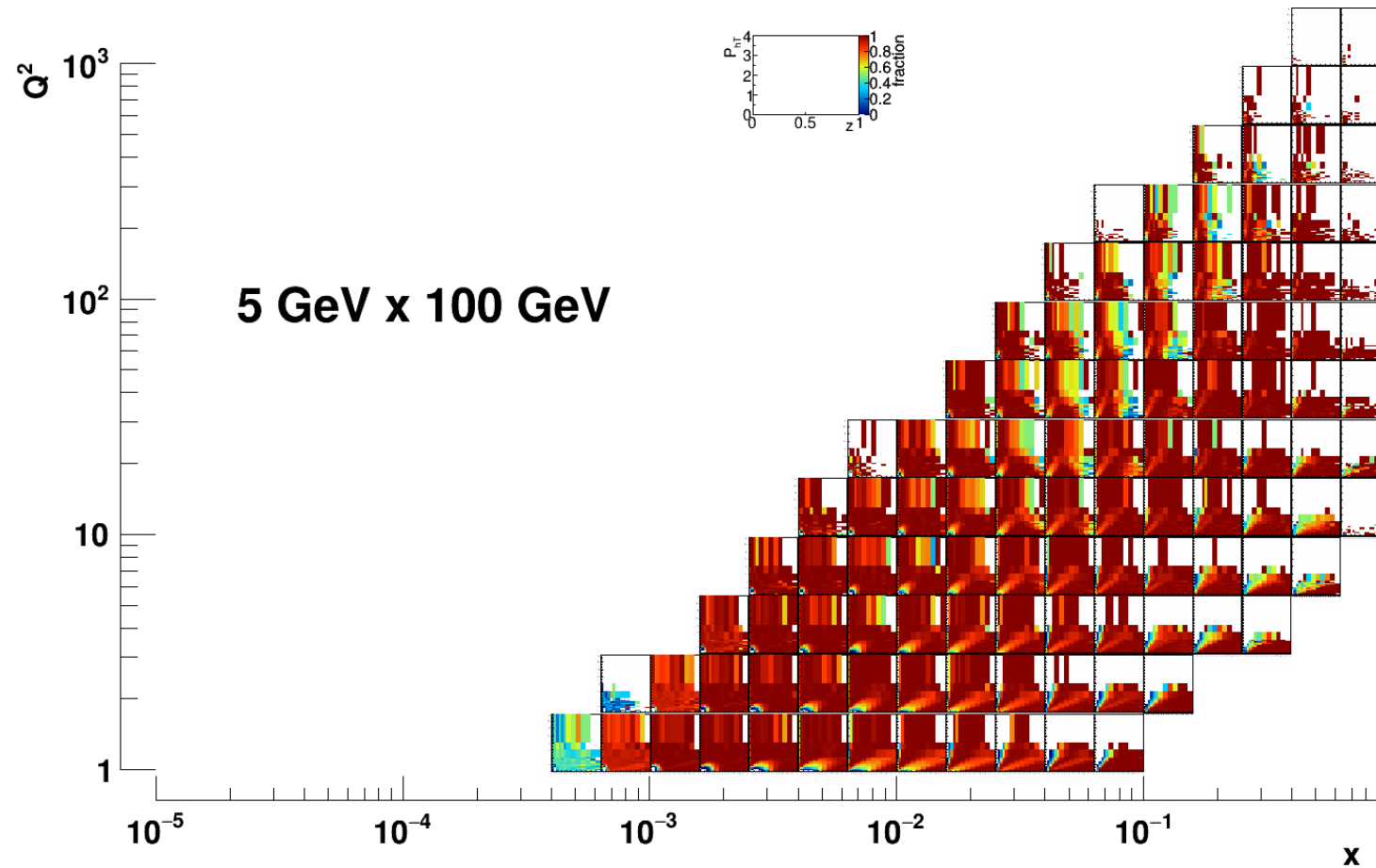
SIDIS



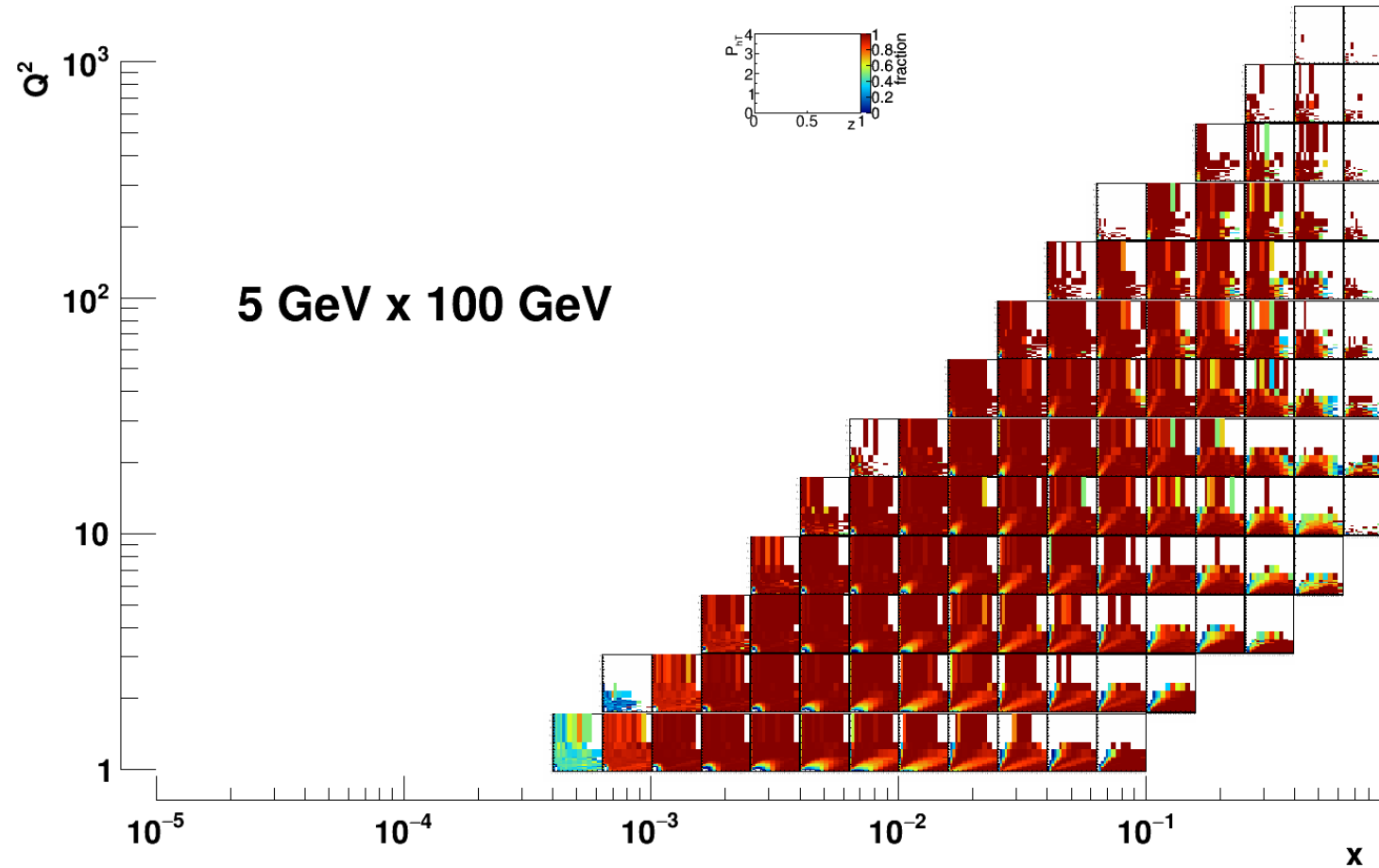
old



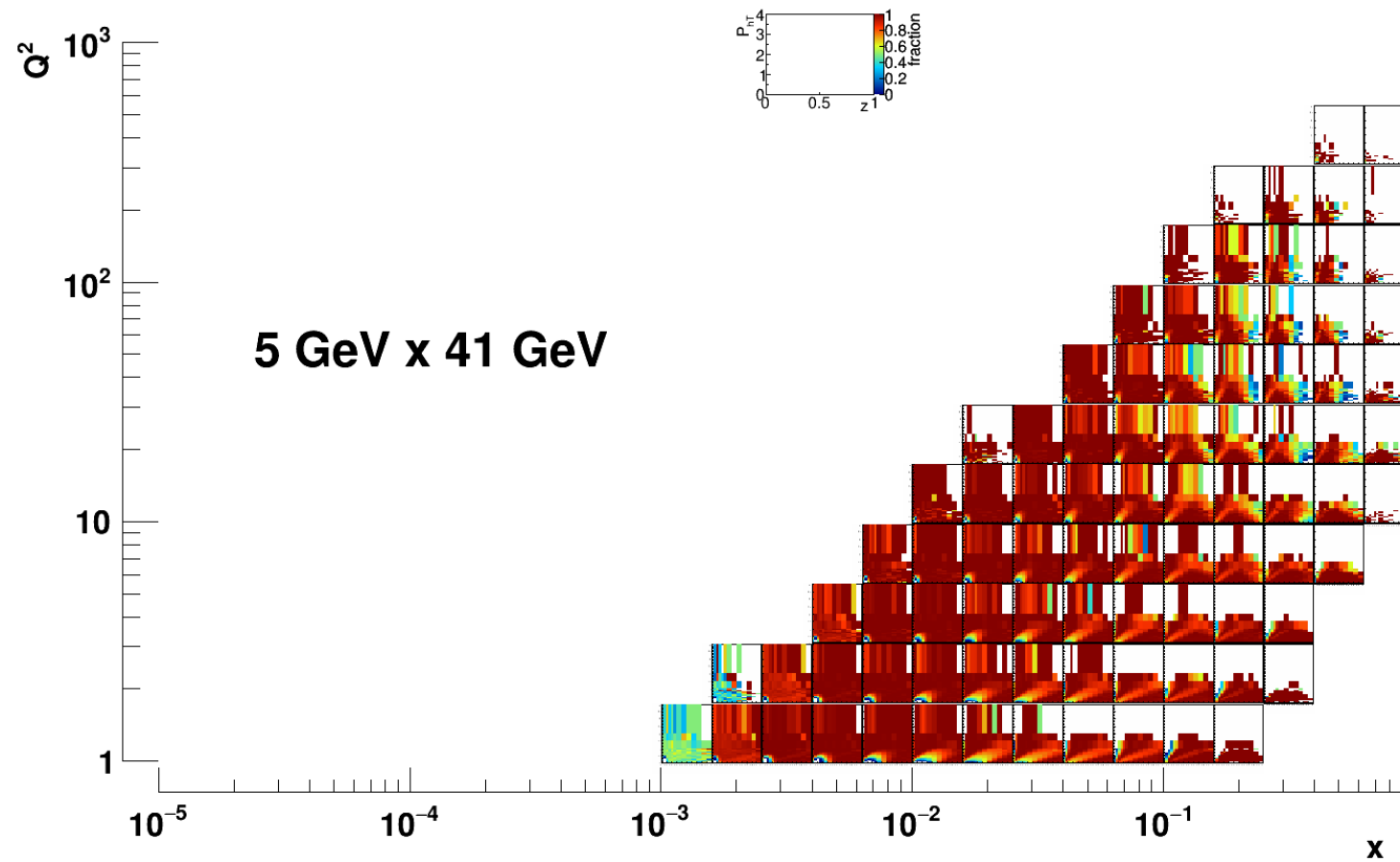
Very high p



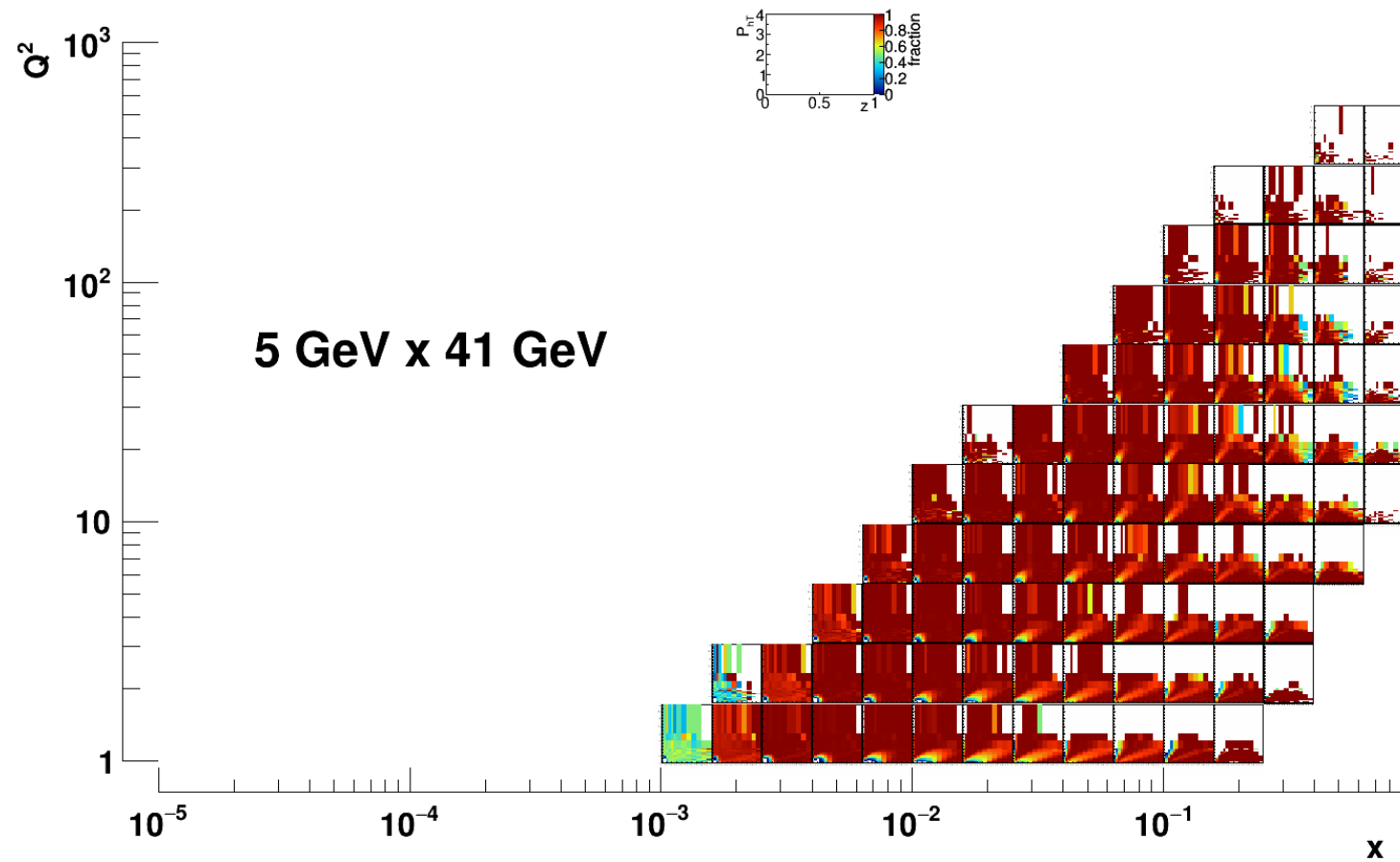
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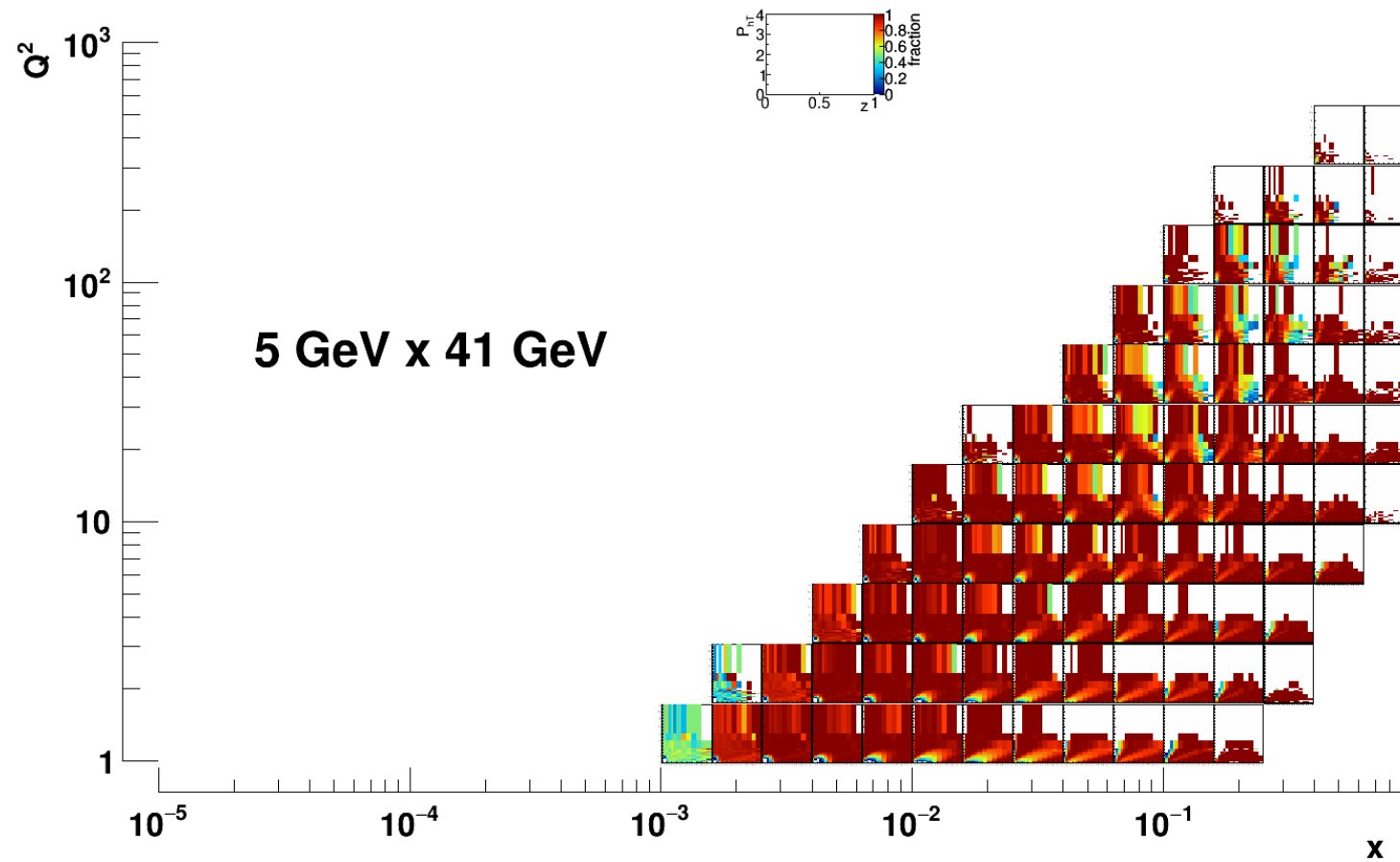
Matrix

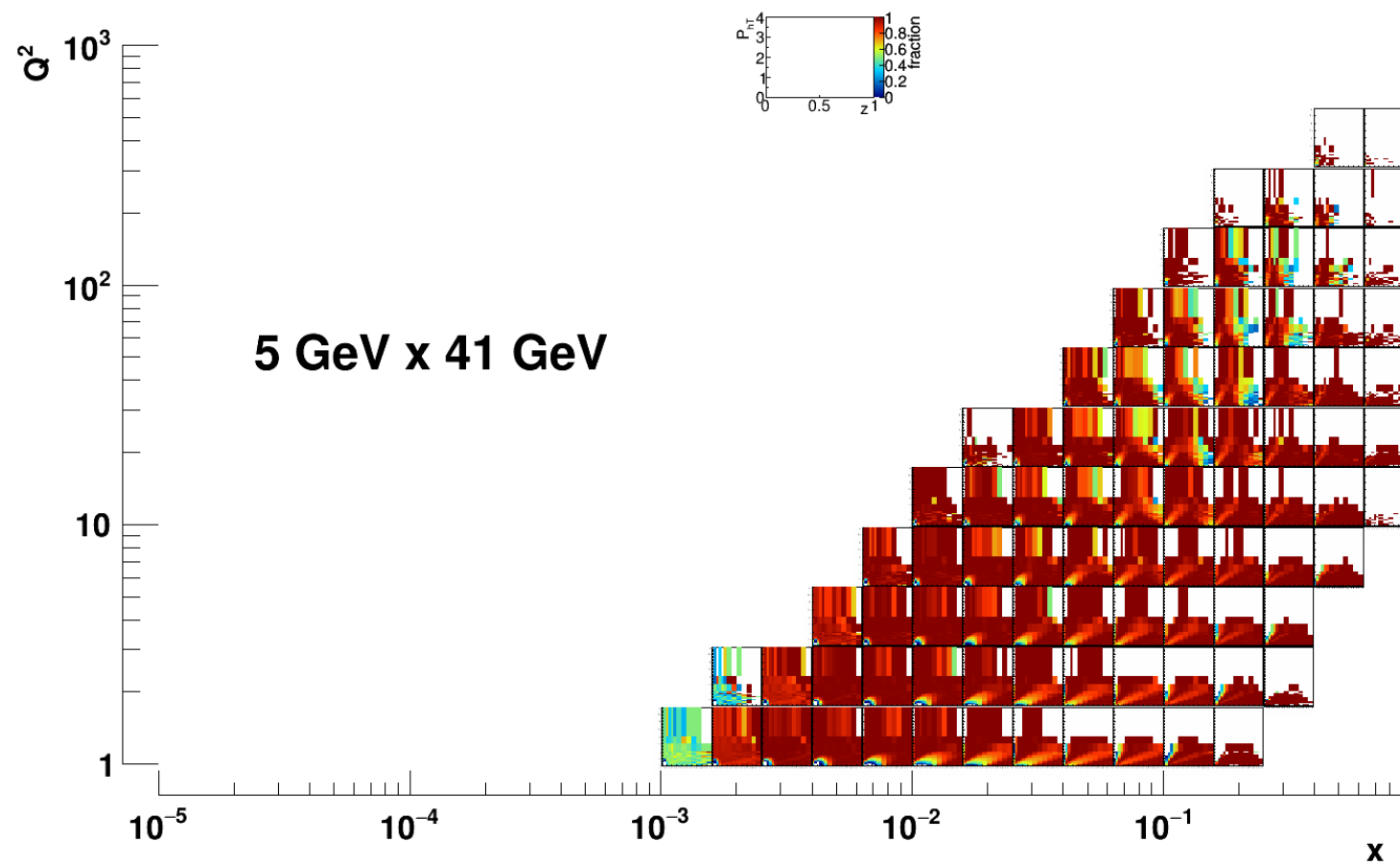


SIDIS

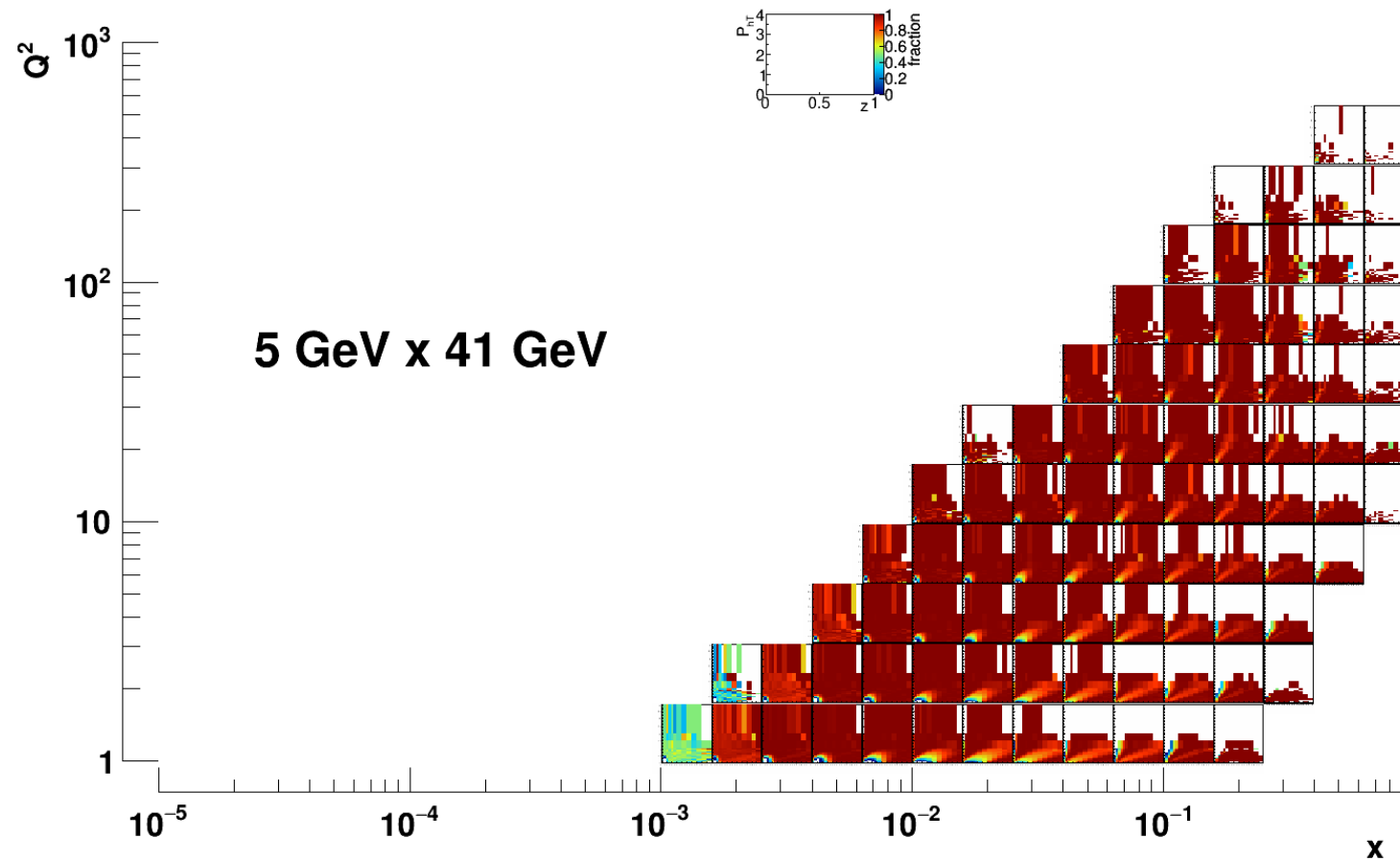


old

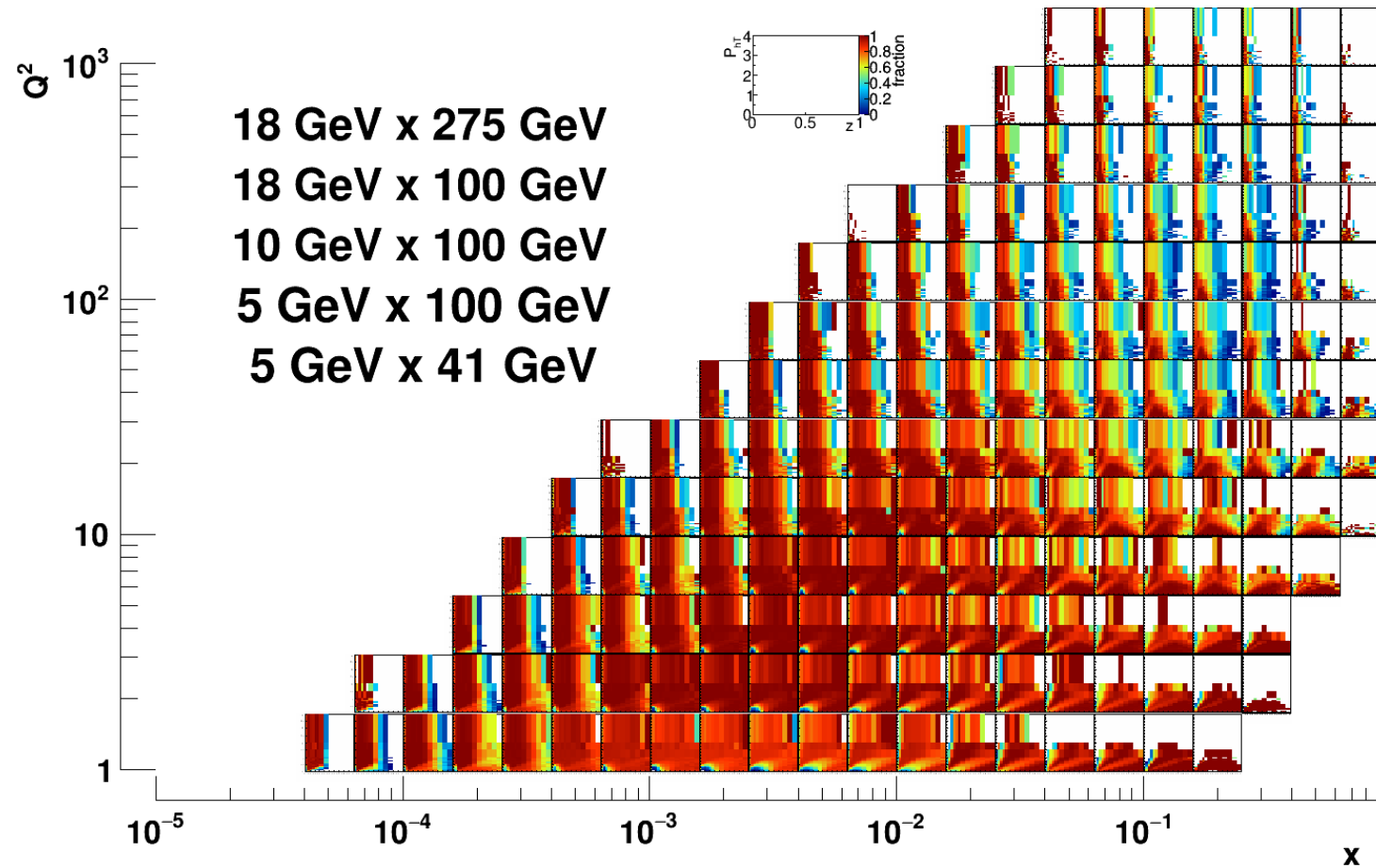




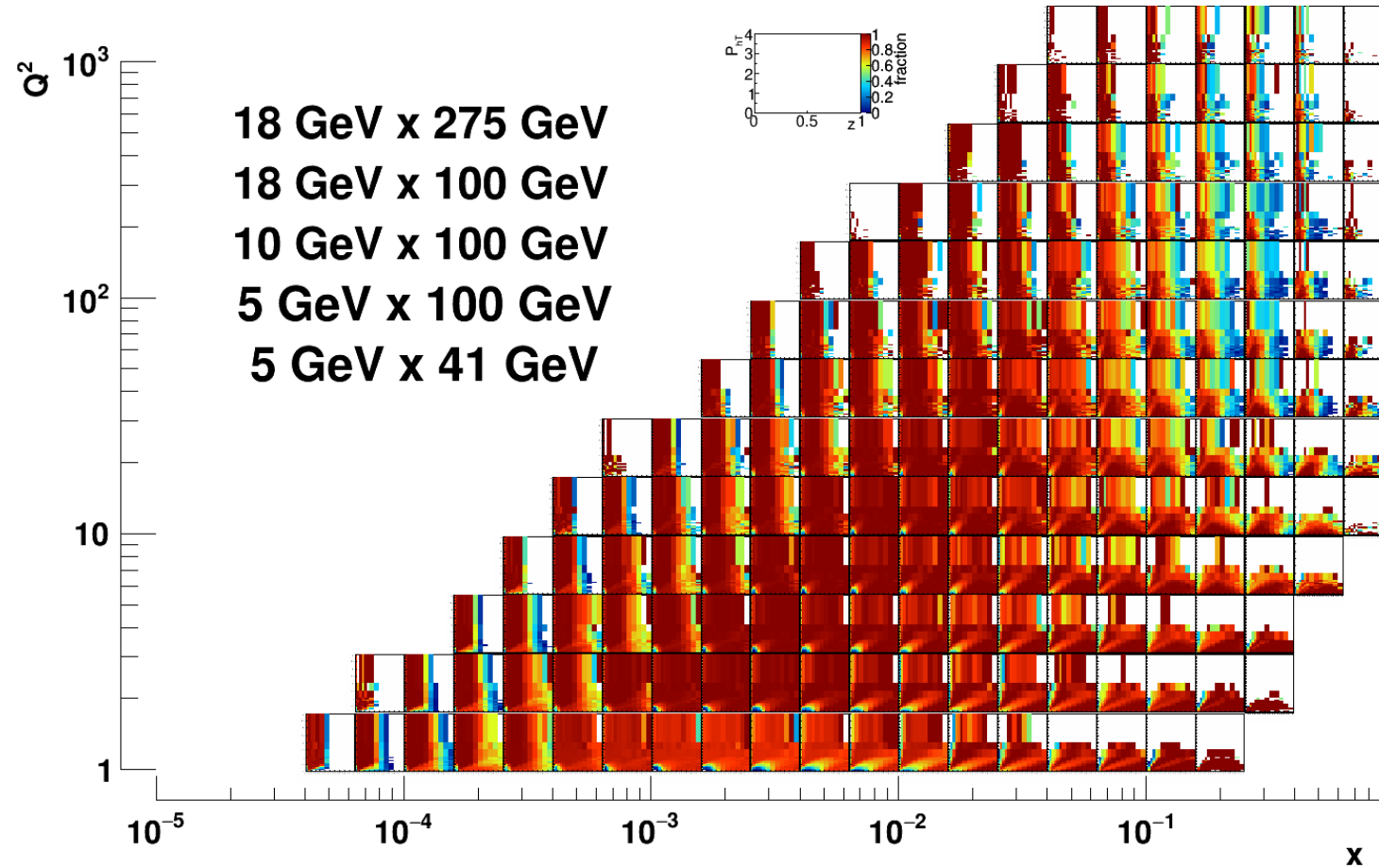
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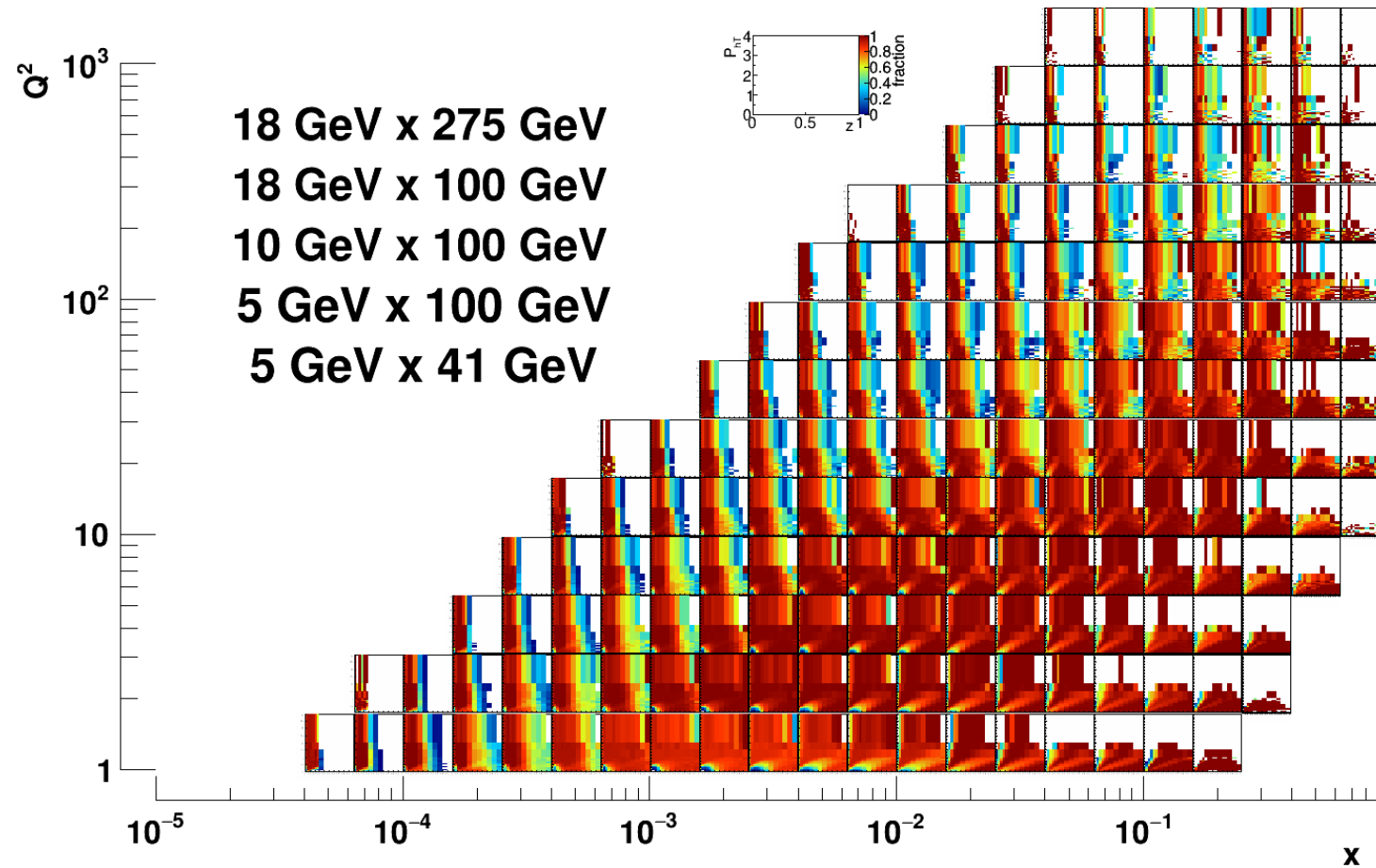
Matrix



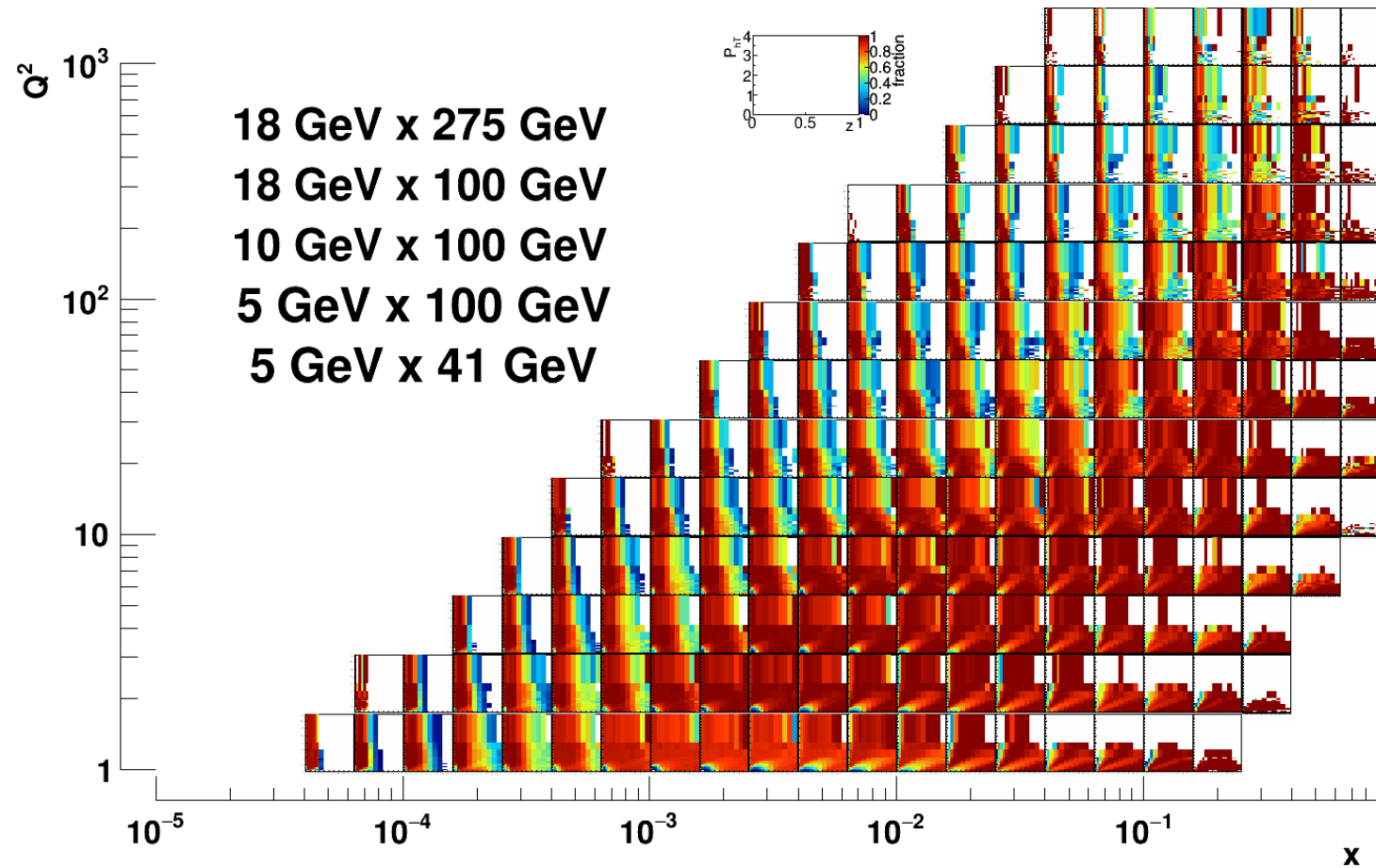
SIDIS



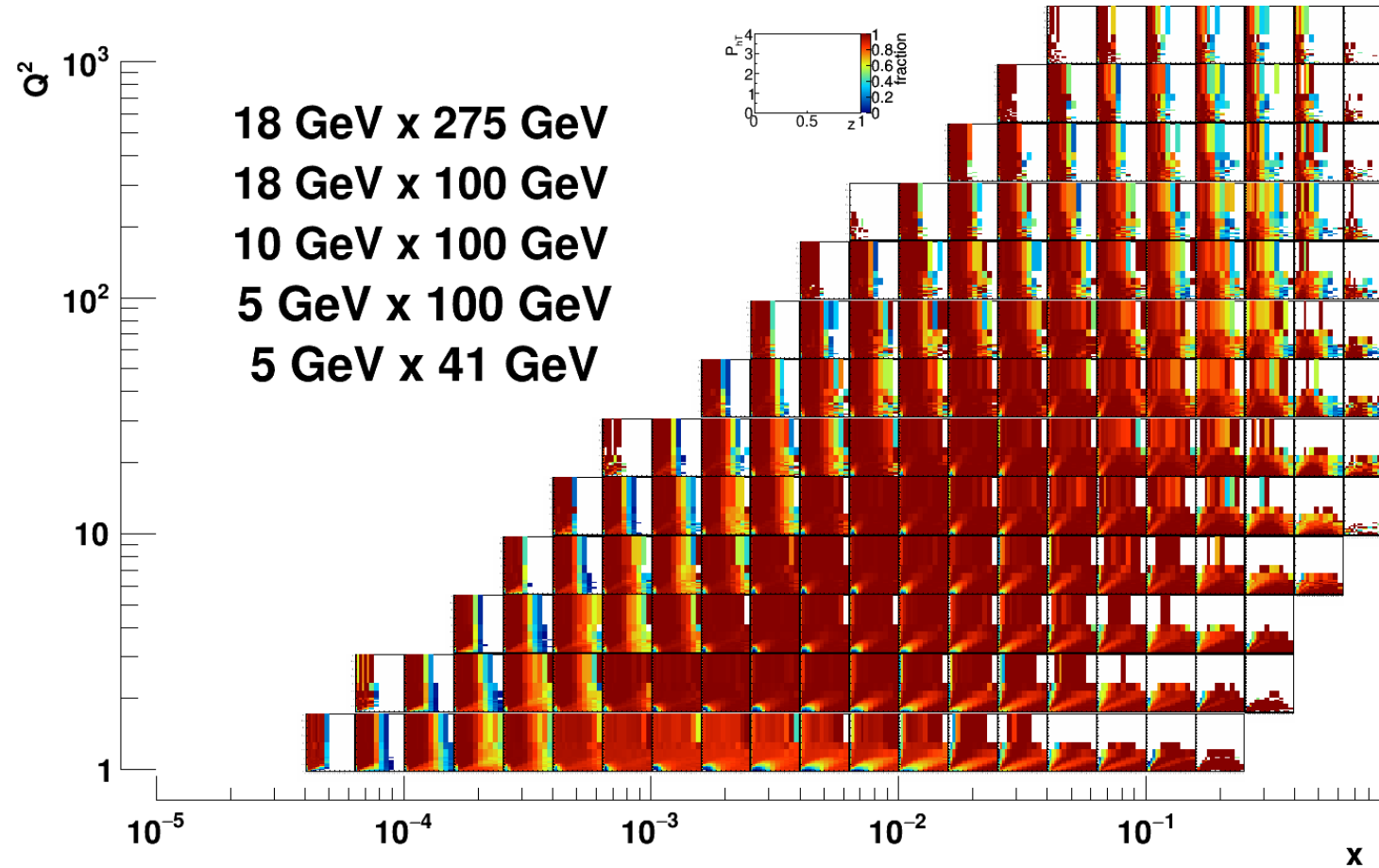
old



Very high P



SIDIS request



SIDIS group's detector matrix

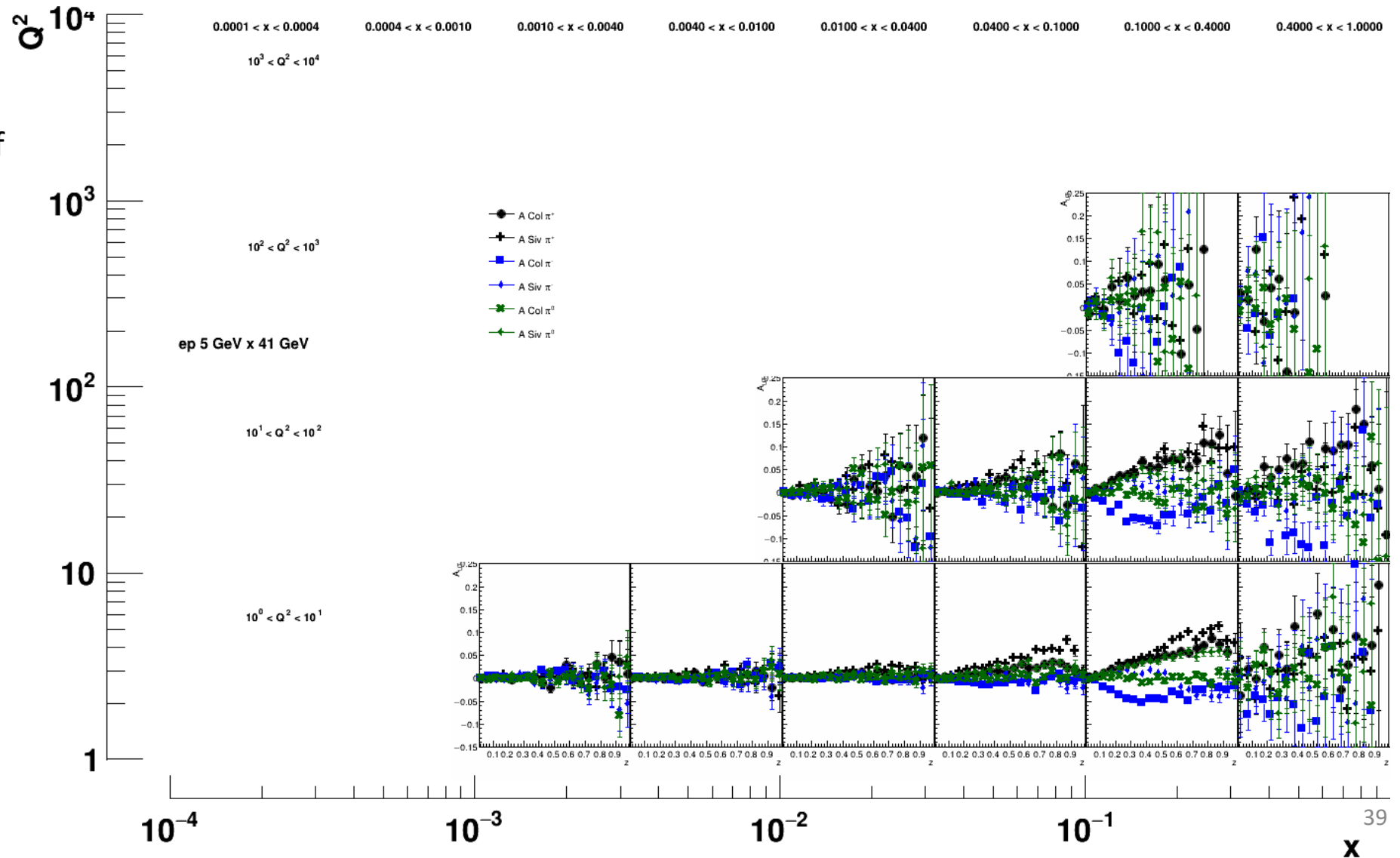
η	Nomenclature	Resolution	Tracking Allowed X/X0	Si-Vertex	minimum-pT	Electrons Resolution $\sigma E/E$	PID	Photons min E	$\pi/K/p$ p-Range (GeV/c)	Separati on	HCAL Resoluti on $\sigma E/E$	Muons
-6.9 to -5.8	Auxiliary Detector s $\downarrow p/A$	low-Q2 tagger										
...												
-4.5 to -4.0		Instrumentation to separate charged particles from photons				$2\%/\sqrt{E}$						
-4.0 to -3.5	Central Detector	Backward Detector										
-3.5 to -3.0												
-3.0 to -2.5												
-2.5 to -2.0												
-2.0 to -1.5												
-1.5 to -1.0												
-1.0 to -0.5		Barrel										
-0.5 to 0.0												
0.0 to 0.5												
0.5 to 1.0												
1.0 to 1.5	Forward Detectors	$\sigma p/p \sim 0.05\% \times p + 0.5\%$										
1.5 to 2.0												
2.0 to 2.5												
2.5 to 3.0												
3.0 to 3.5												
3.5 to 4.0	Auxiliary Detector s $\uparrow e$	Instrumentation to separate charged particles from photons										
3.5 to 4.0												
4.0 to 4.5												
...												
> 6.2		Proton Spectrometer										

Summary

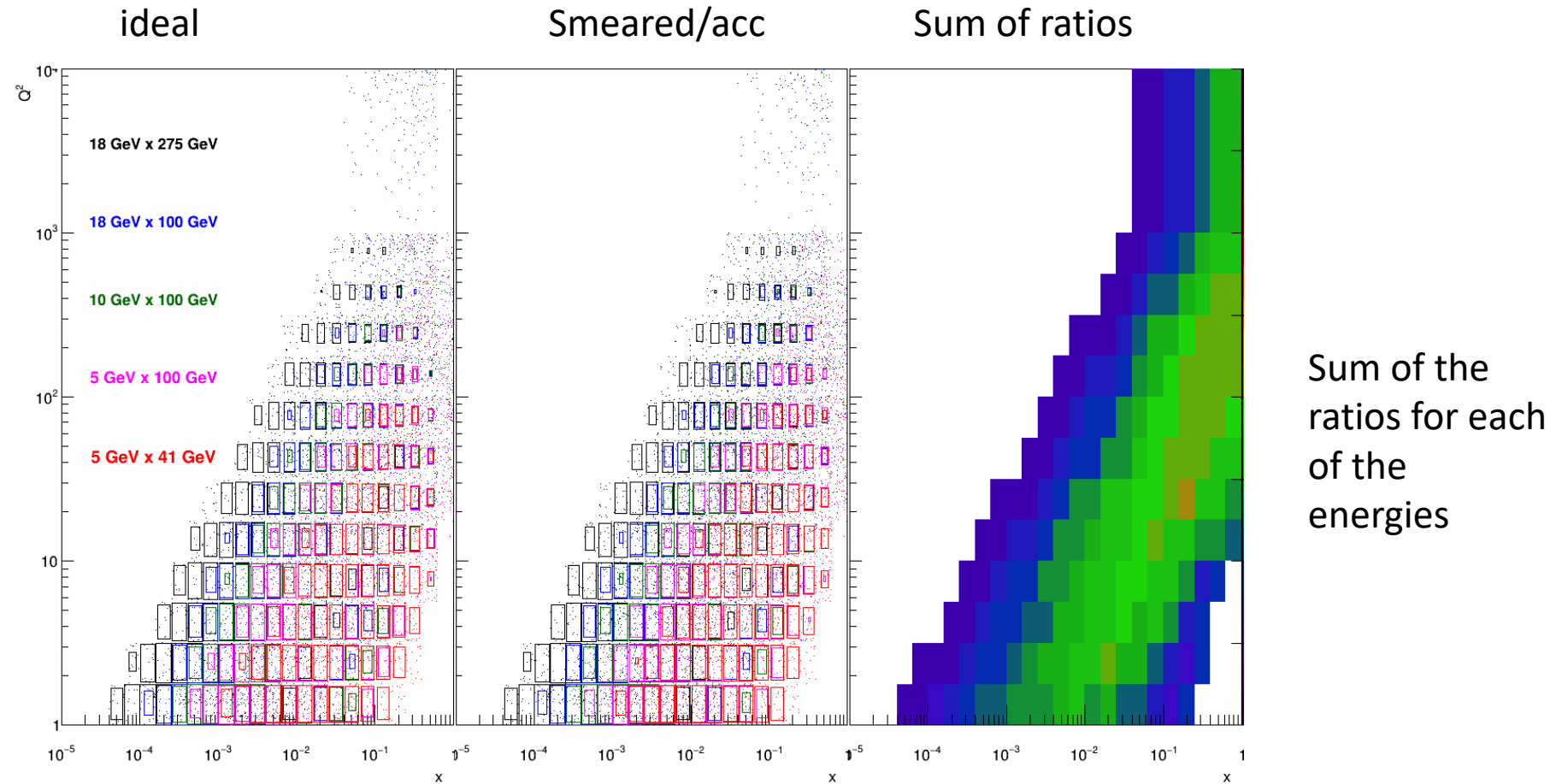
- SIDIS preferences help at intermediate x , z and Q^2 ranges for all transverse momenta over official detector matrix
- Old setting particularly helpful for larger z , x and Q^2 , but 50 GeV PID acceptance already at rapidities from 2 very unlikely → try to push as much as is possible: 20/30/45 GeV
- Very high momentum for π^0 would help at the highest x and z but would require expensive pre-shower
- Conclusion:
 - higher P ranges help – forward ($\eta > 1$) may be even more important as harder to cover by different energies
 - No need to cover more than 8 GeV at central rapidities

Torino08 weighted asymmetries

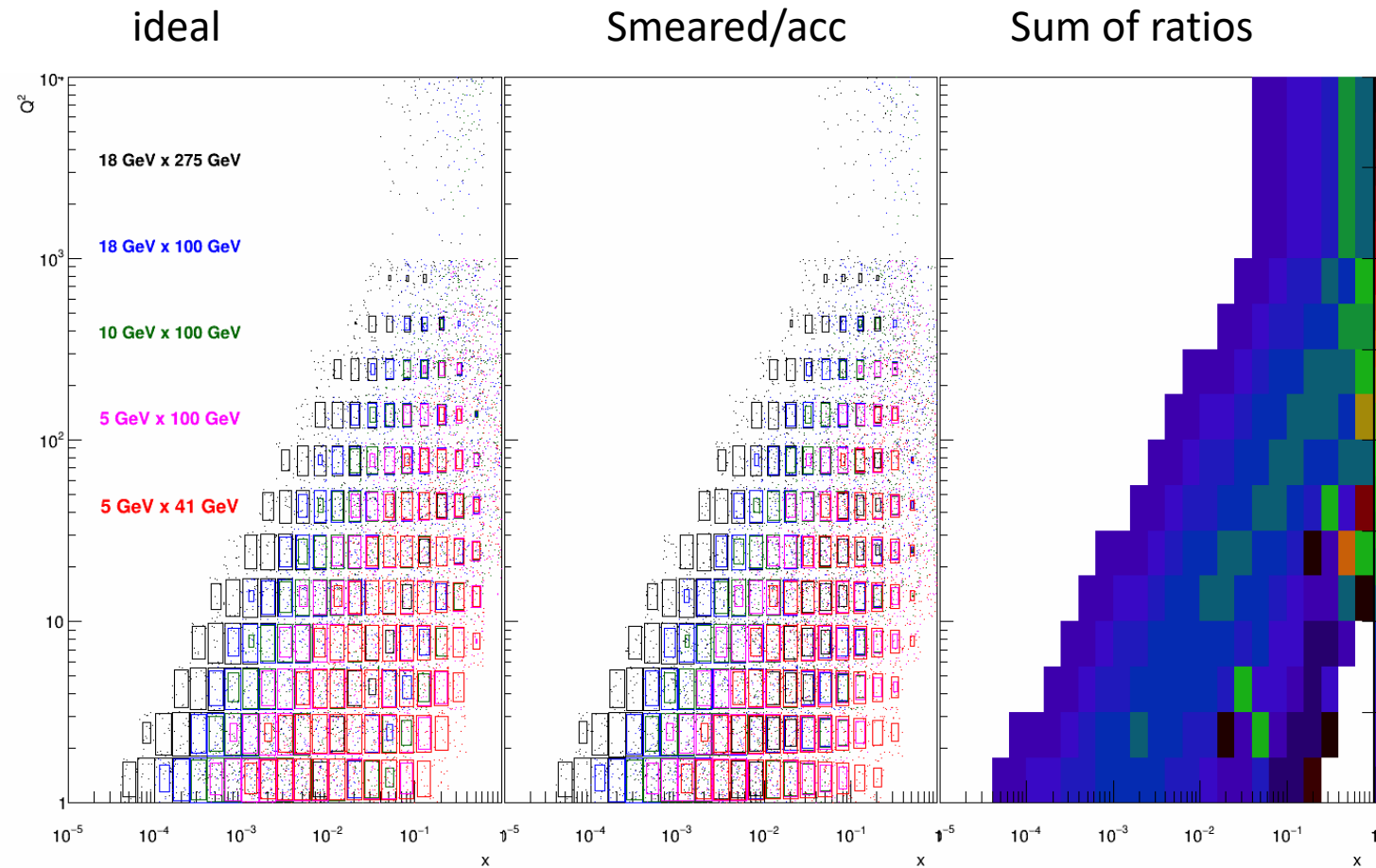
- Simultaneous 2D fit of
Sivers and Collins
asymmetries
- Currently summed
over all pt bins
- **Not** yet scaled to
10fb-1 (Currently just
20 M DIS events)



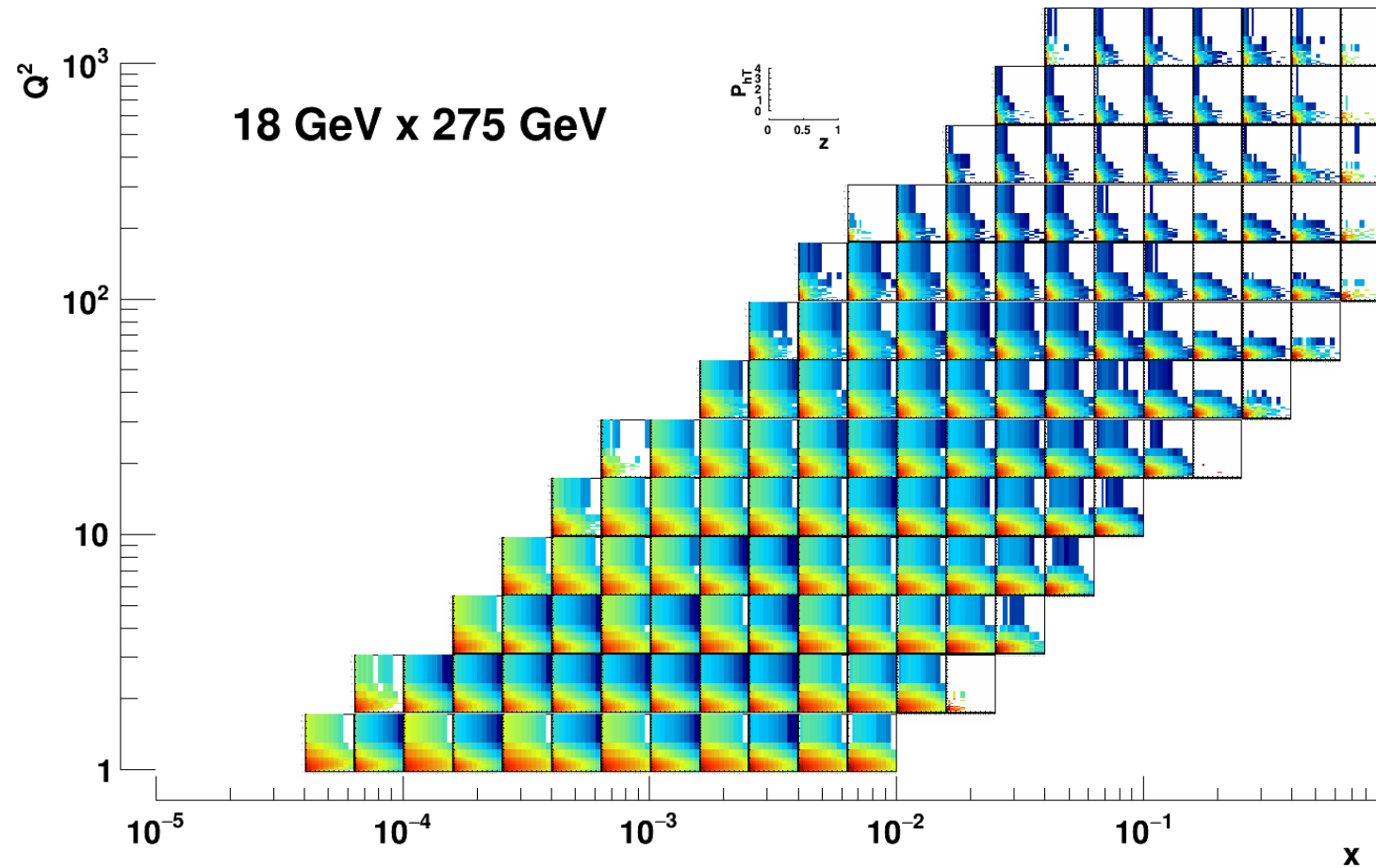
Kinematical acceptances (perfect to 3.5, PID ranges)



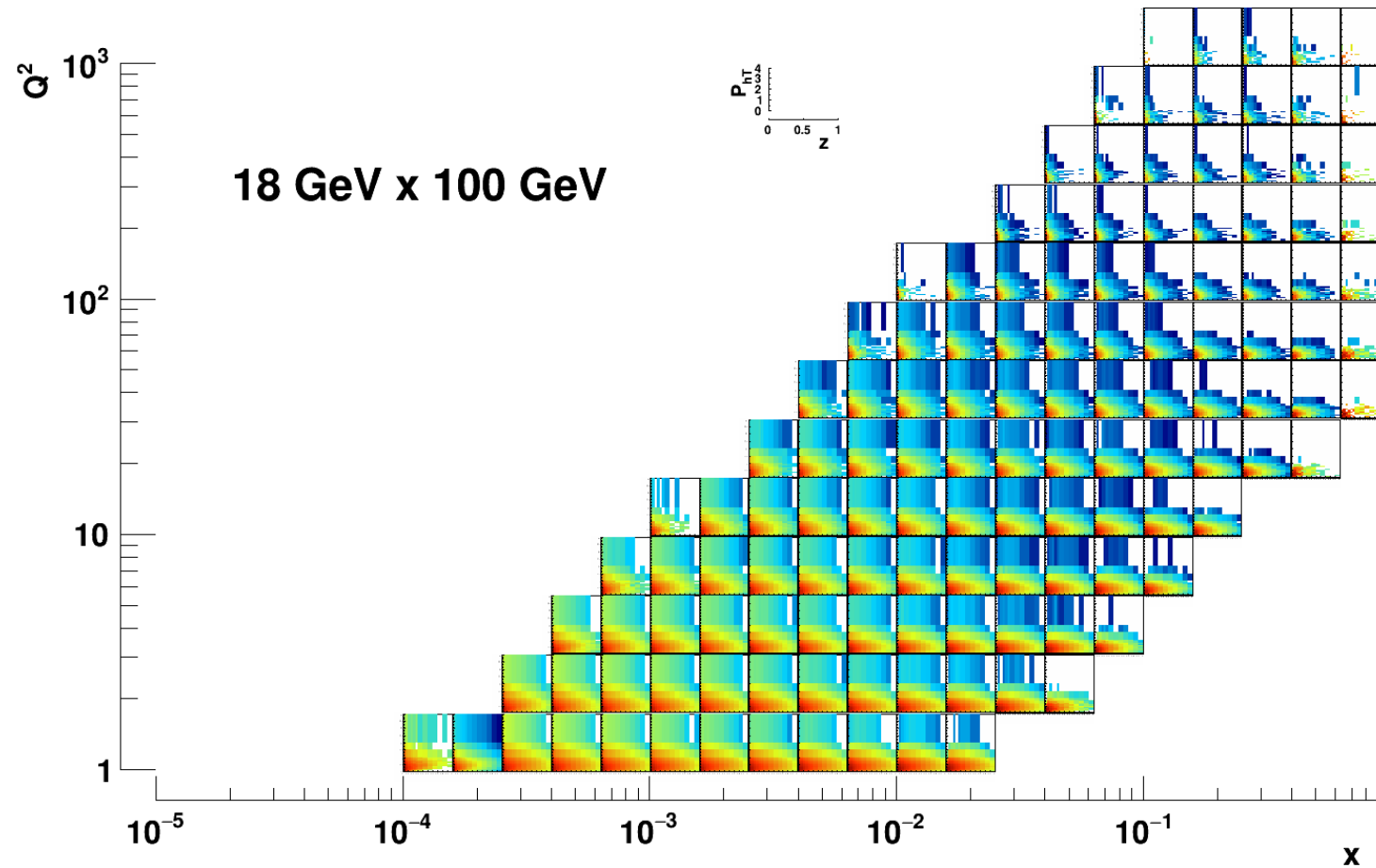
Kinematical acceptance (Handbook)



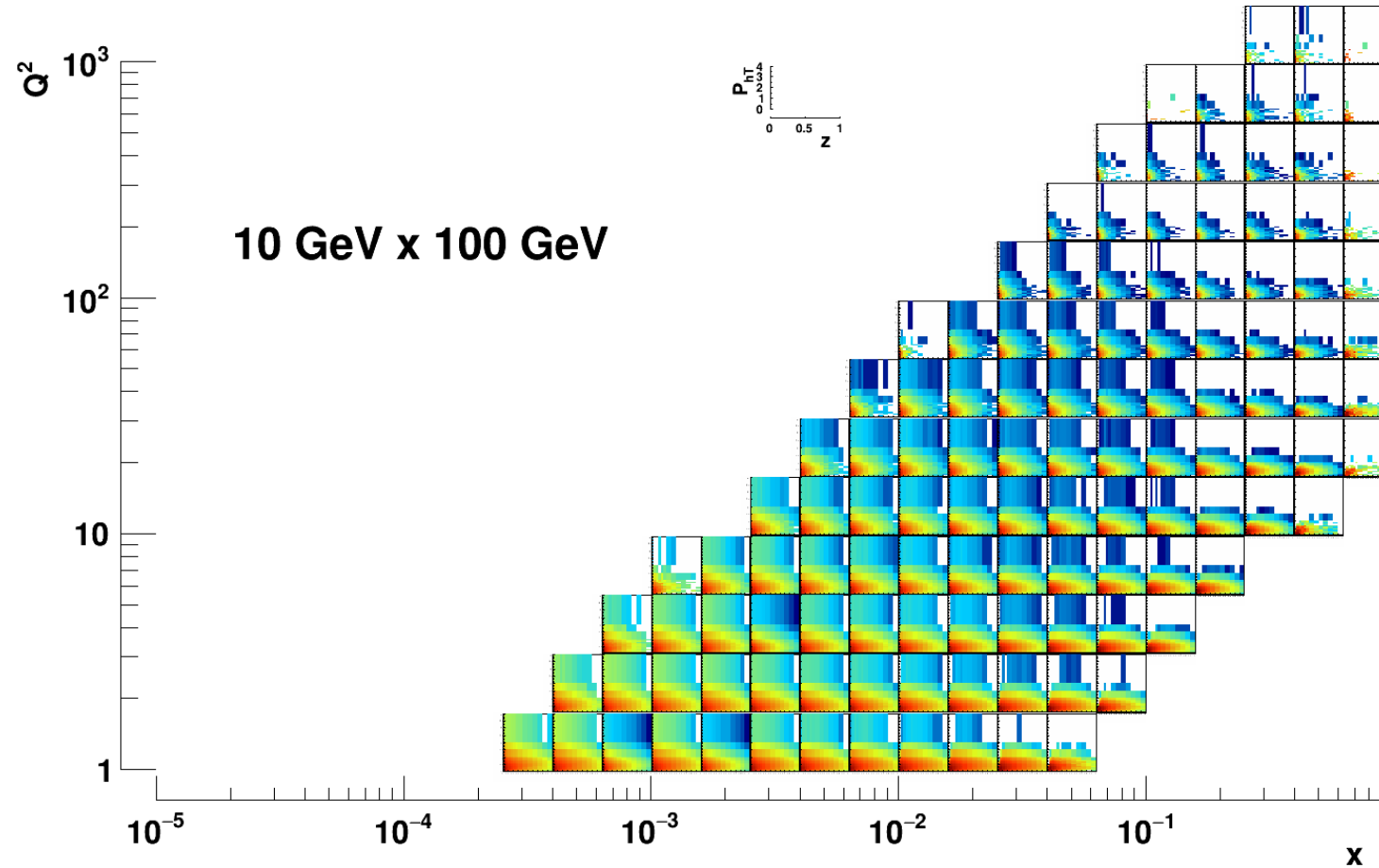
4D distributions



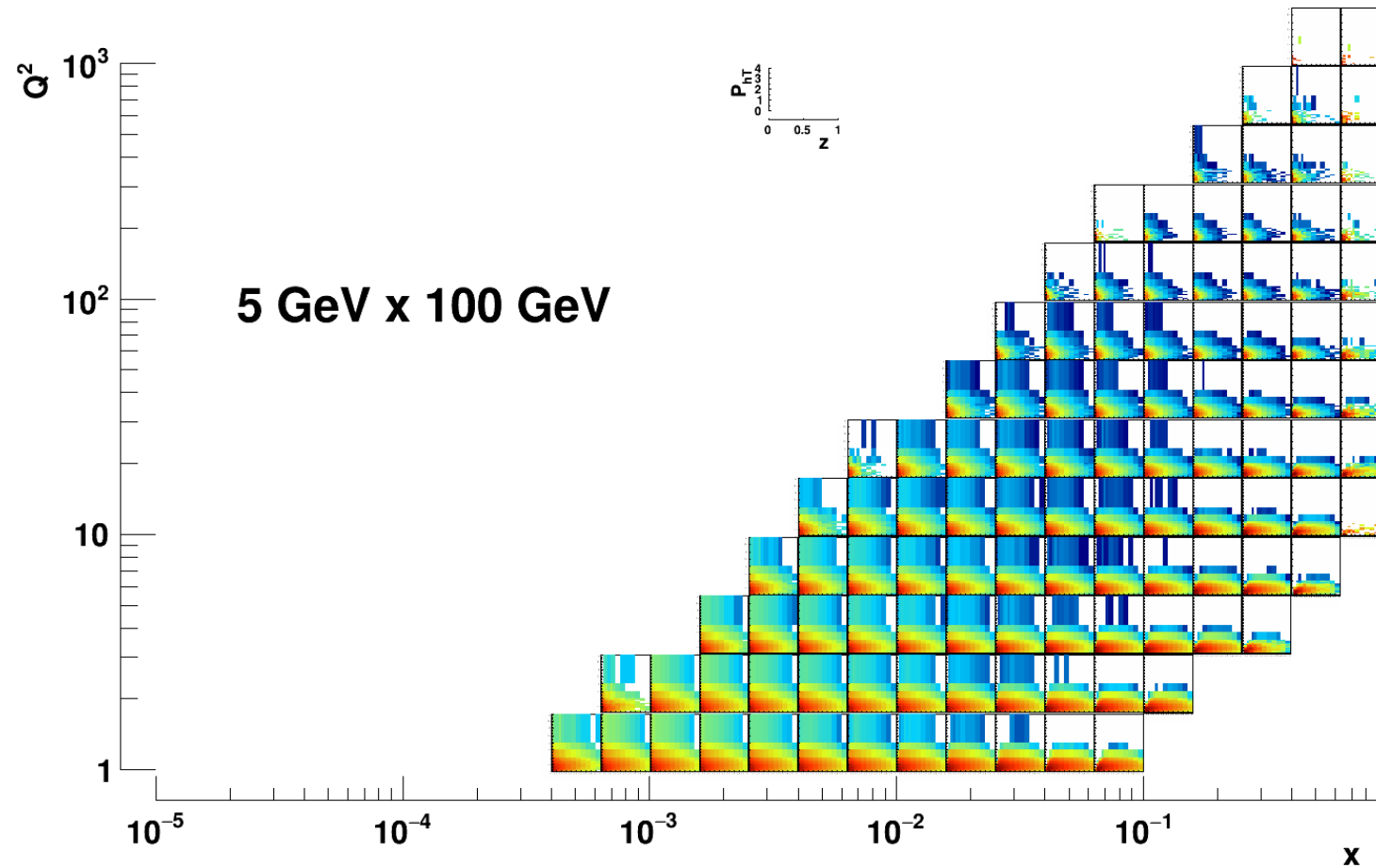
4D distributions

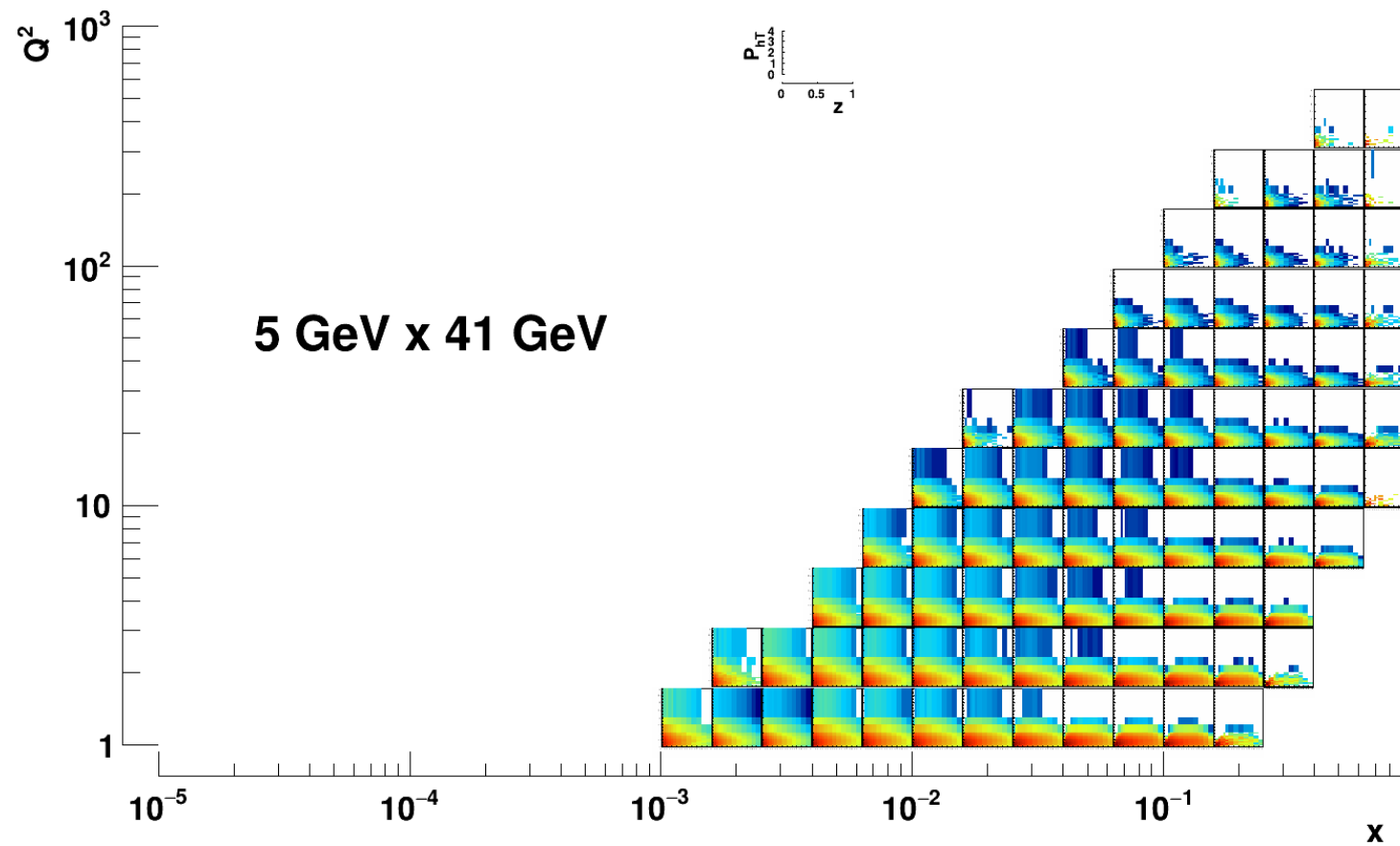


4D distributions

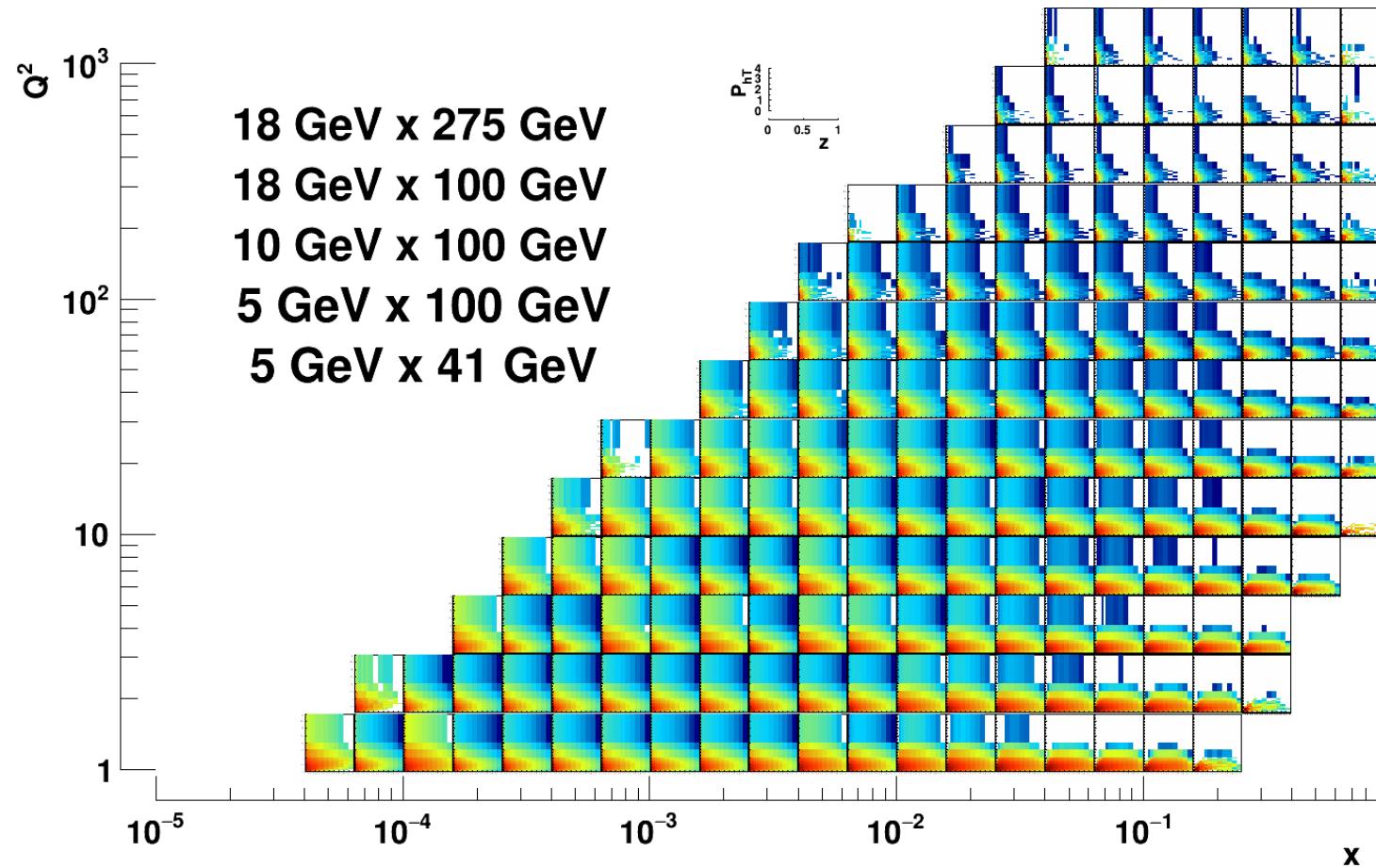


4D distributions

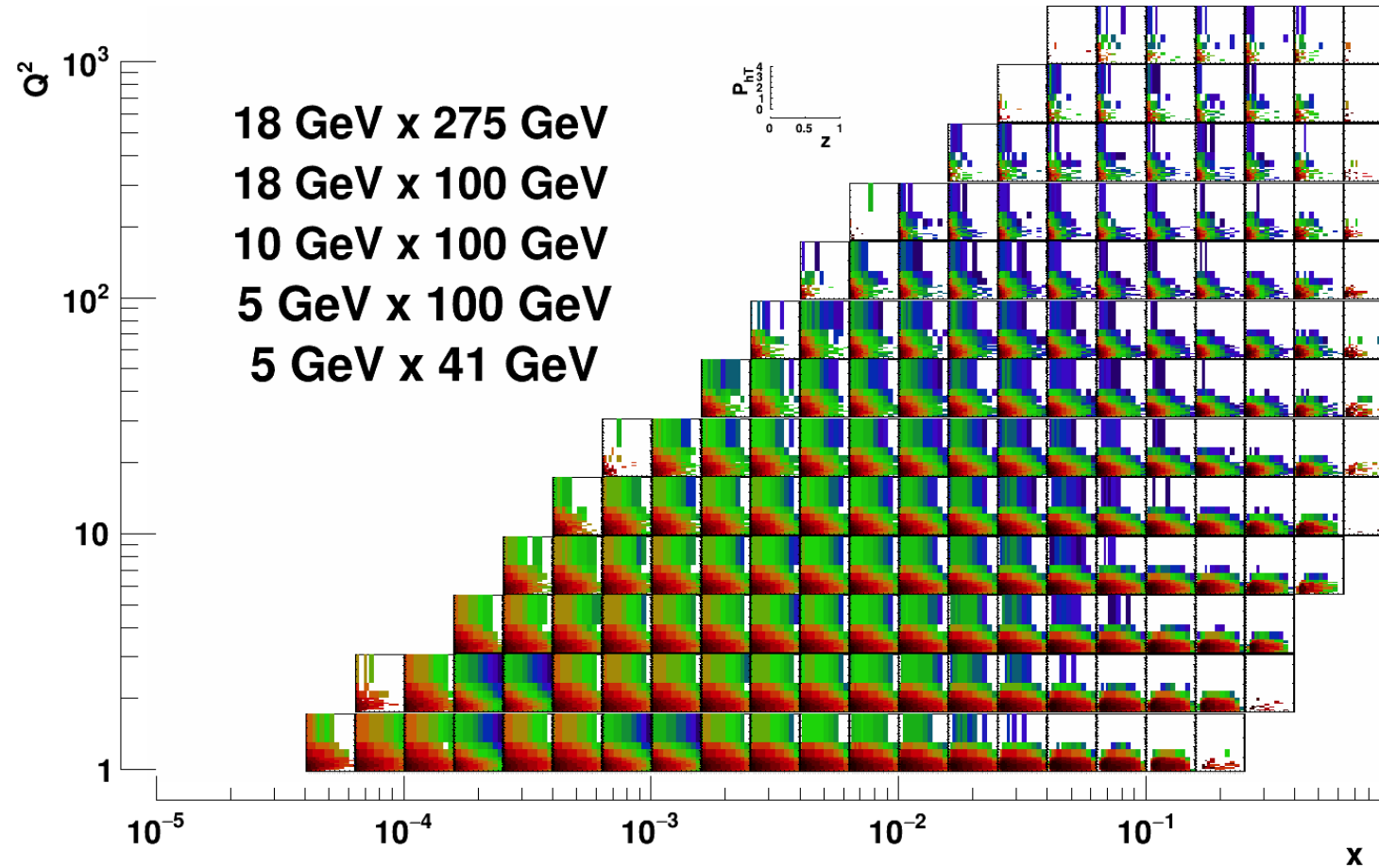




4D distributions



4D distributions (K^-)



SIDIS	π	K	p
-3.5 - -1.0	0.2 - 7	0.2 - 7	0.2 - 7
-1.0 - 1.0	0.2 - 8	0.2 - 8	0.2 - 8
1.0 - 2.0	0.2 - 10	0.2 - 10	0.2 - 10
2.0 - 3.0	0.5 - 20	1.6 - 20	3.0 - 20
3.0 - 3.5	0.5 - 45	1.6 - 45	3.0 - 45