

Introduction

- today we check the effect of new acceptance cut ($|\eta| < 3.5$) and smearing of y
- toyMC connected to `eic-smear` for both acceptance and smearing
- in `eic-smear` we use `SmearMatrixDetector_0_1_FF` with $|\eta| < 4.5$

MatrixDetector
0.1 with Far
Forward
detectors

1.1.0

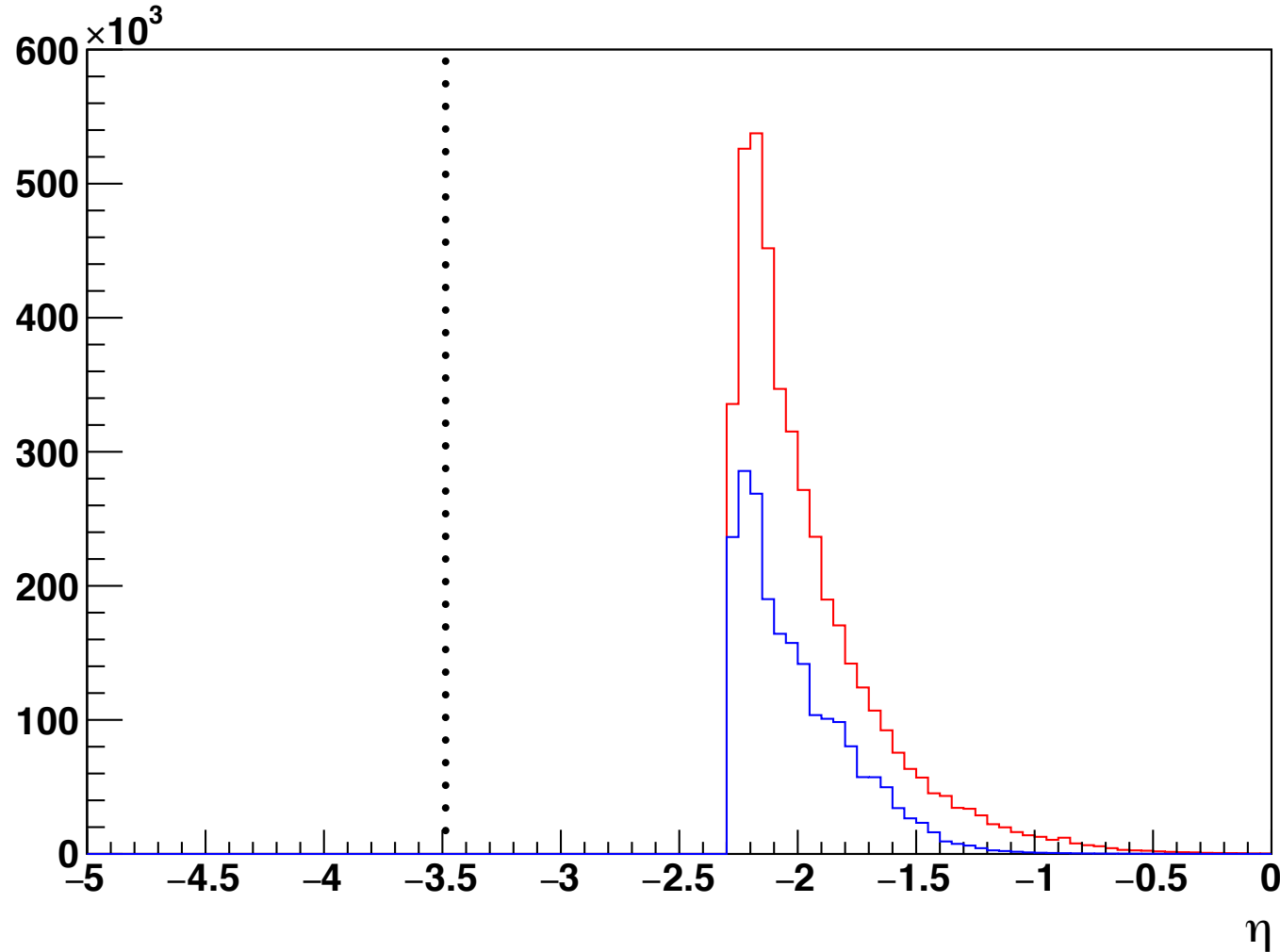
Based on the Detector Matrix from June 16 2020 with additional ZDC, B0, and Roman Pots, as found in the [Detector Forward-IR Wiki](#). The ZDC only accepts neutrons and photons by default. The Build function accepts the beam momentum per nucleon as an integer parameter. Only 275, 100, 41 (e+P), and 135 (e+D) are accepted. These are ROUGH approximations only!

from <https://github.com/eic/eicsmeardetectors>

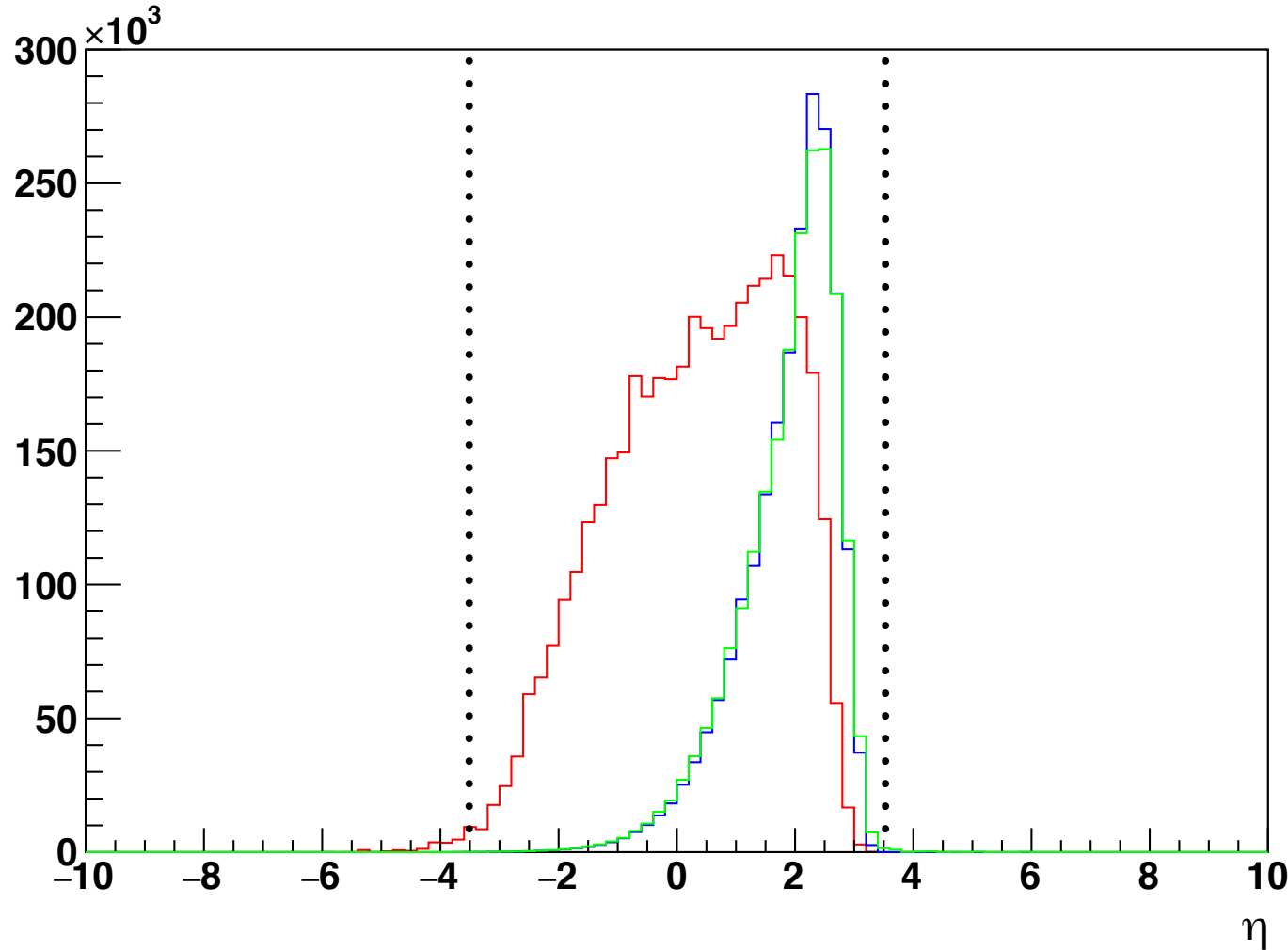
- analysis done with Francesco and Salvatore

new acceptance: 5 x 41

$Q^2 > 1 \text{ GeV}^2$ ● DVCS: e'
 $0.01 < y < 0.95$ ● DVMP π^0 : e'

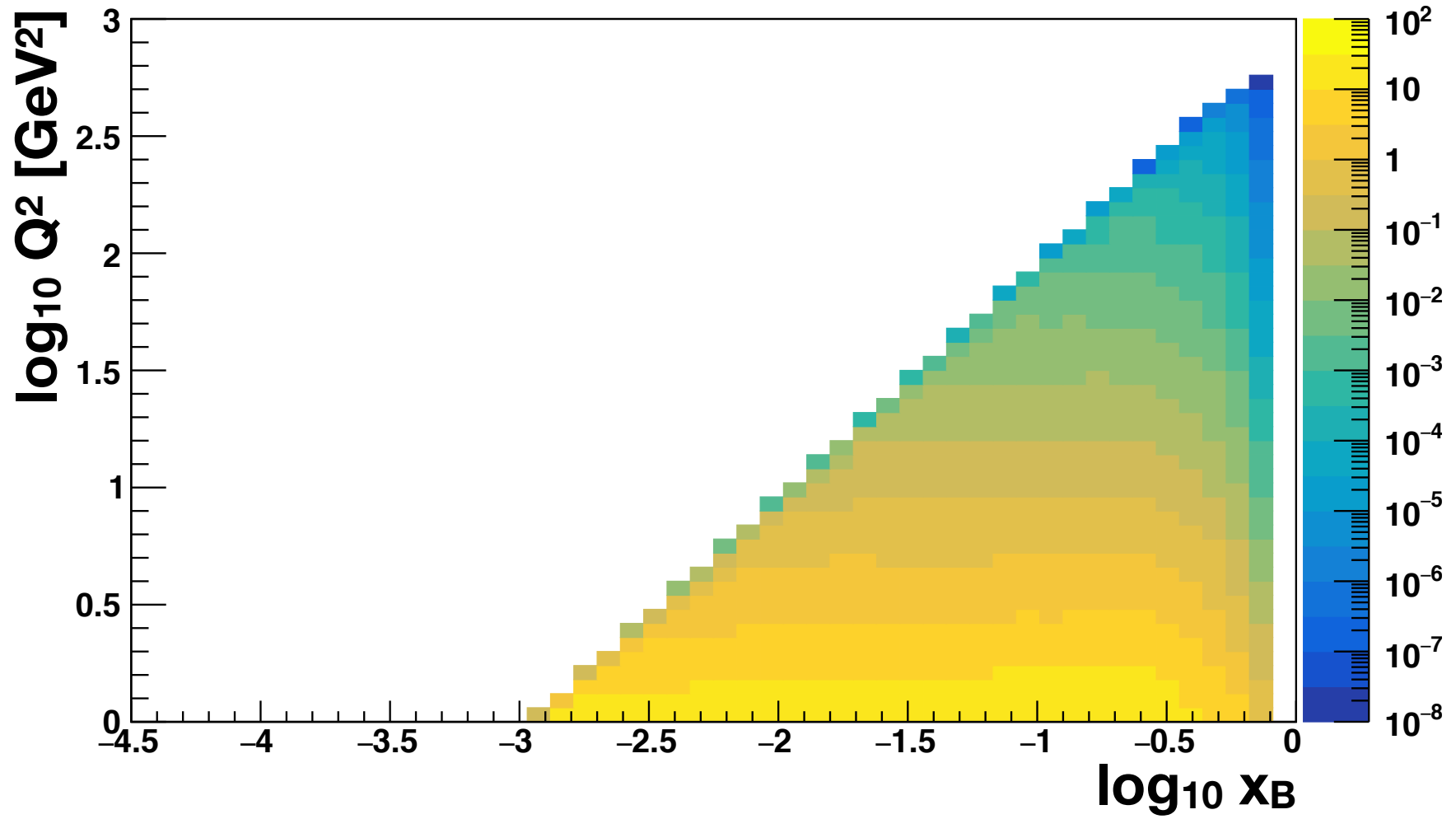


$Q^2 > 1 \text{ GeV}^2$ ● DVCS: γ
 $0.01 < y < 0.95$ ● DVMP π^0 : π^0
 ● DVMP π^0 : $\pi^0 \rightarrow \gamma\gamma$
 (histogram scaled by 0.5)

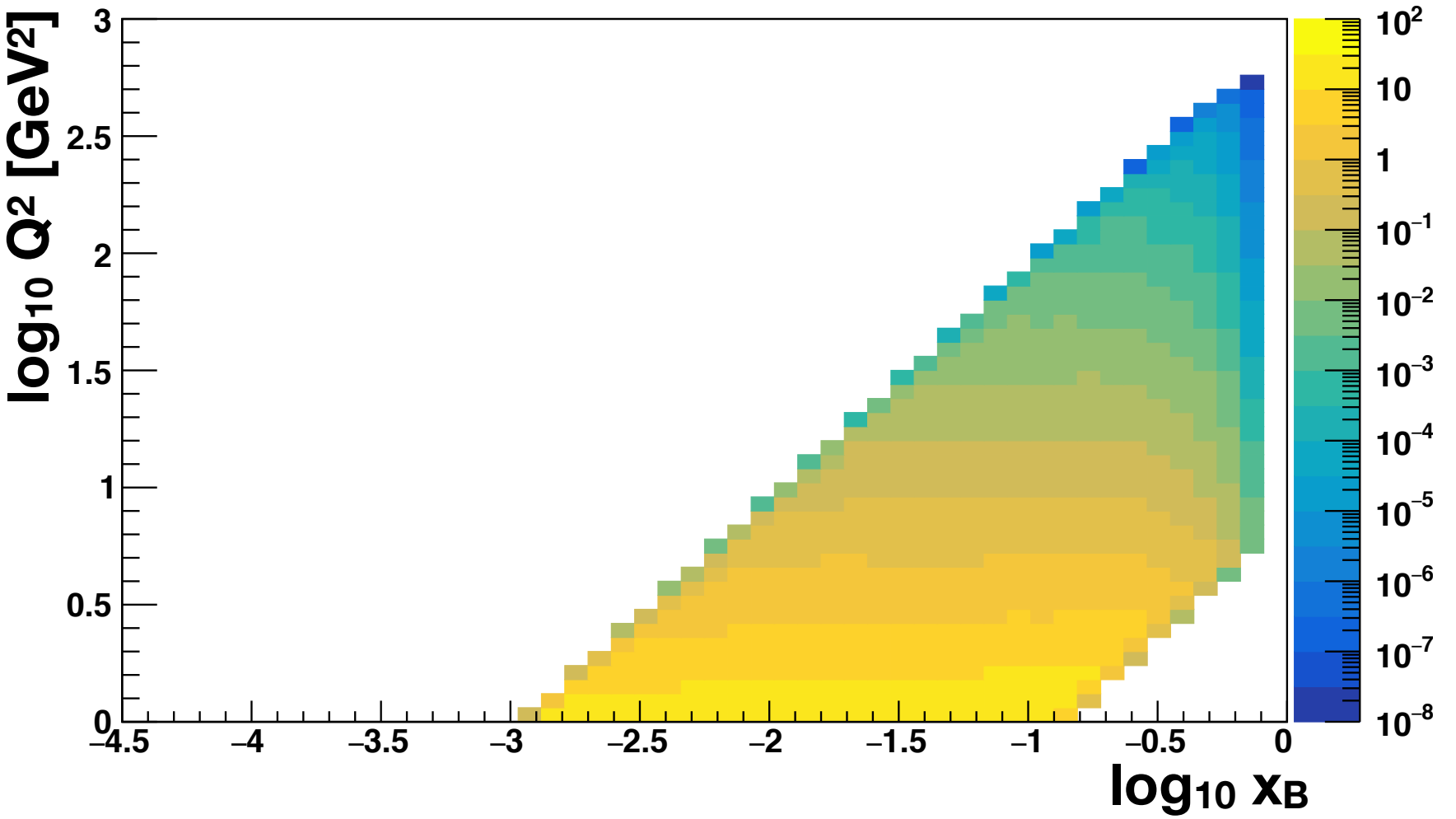


new acceptance: 5 x 41

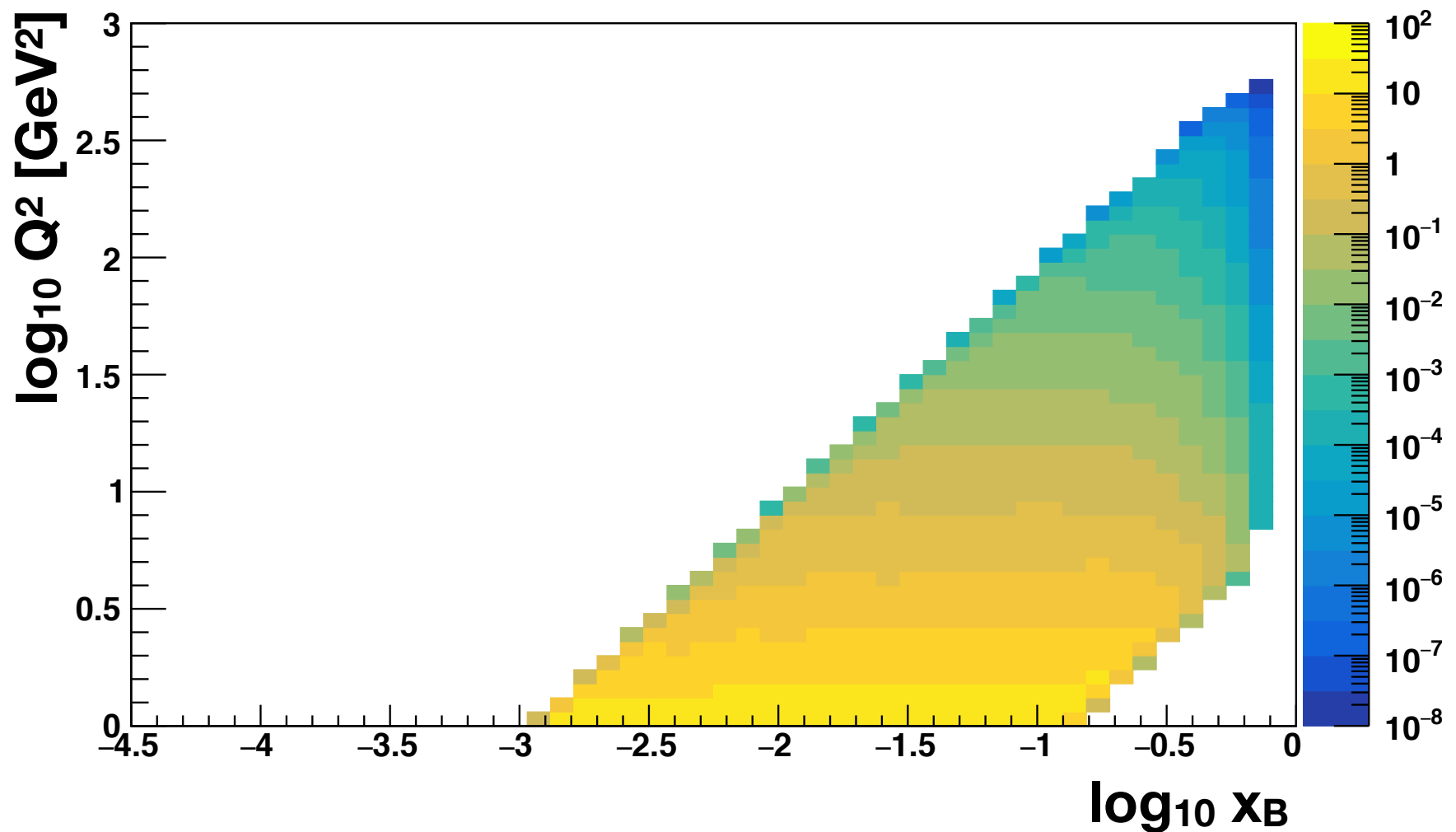
generated



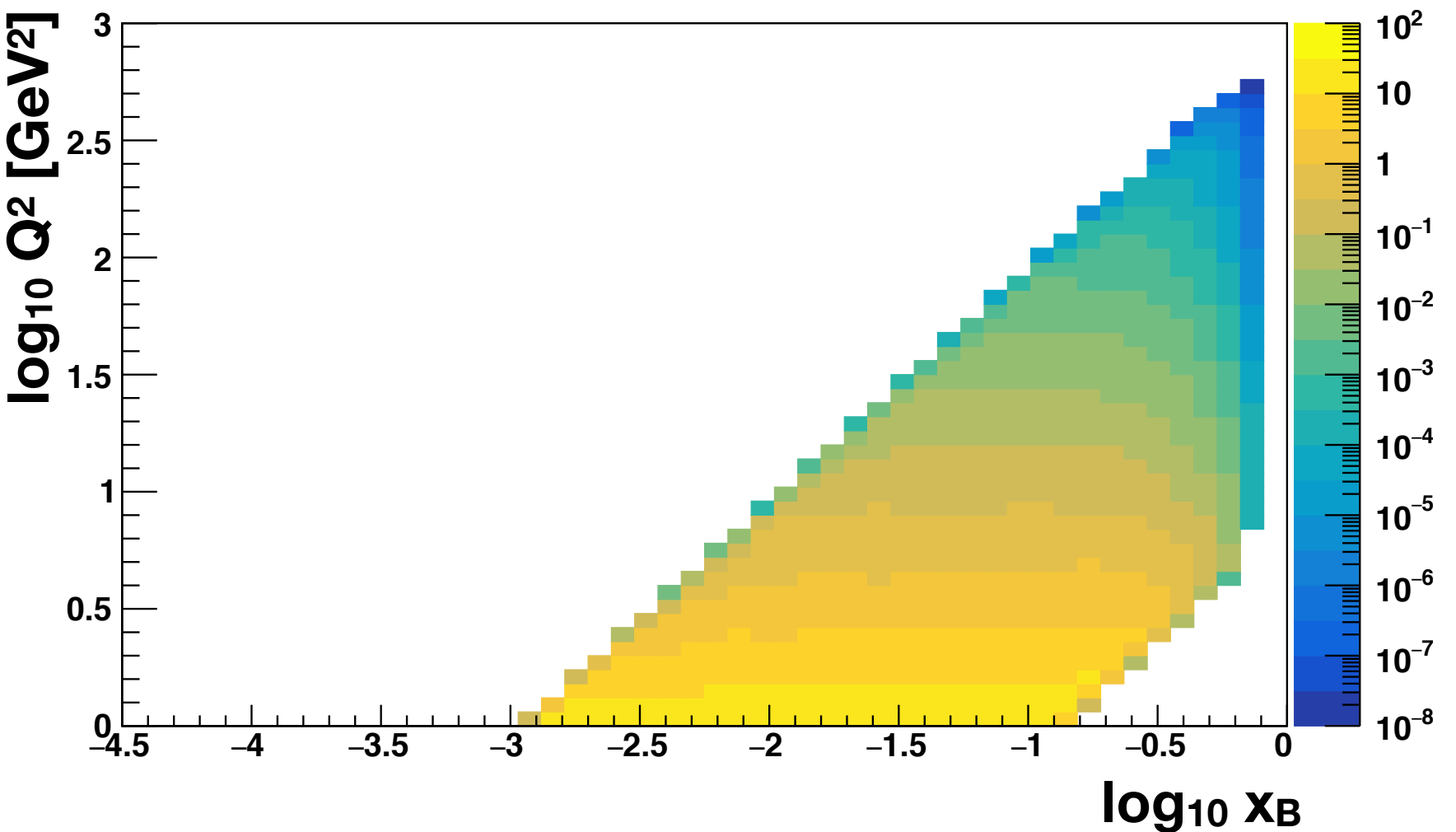
$0.01 < y < 0.95$



$0.01 < y < 0.95$ AND old acceptance

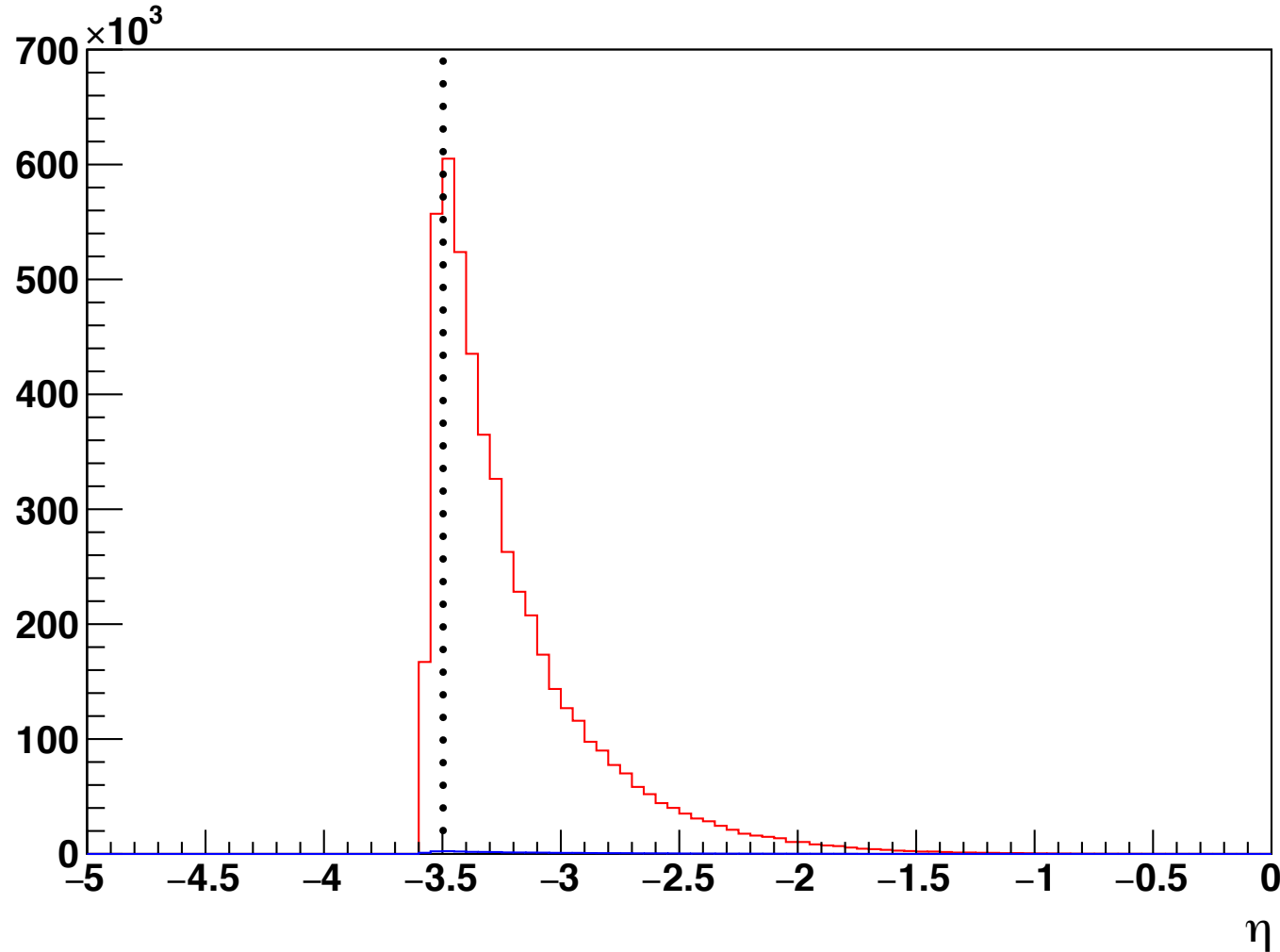


$0.01 < y < 0.95$ AND old acceptance AND $|\eta| < 3.5$

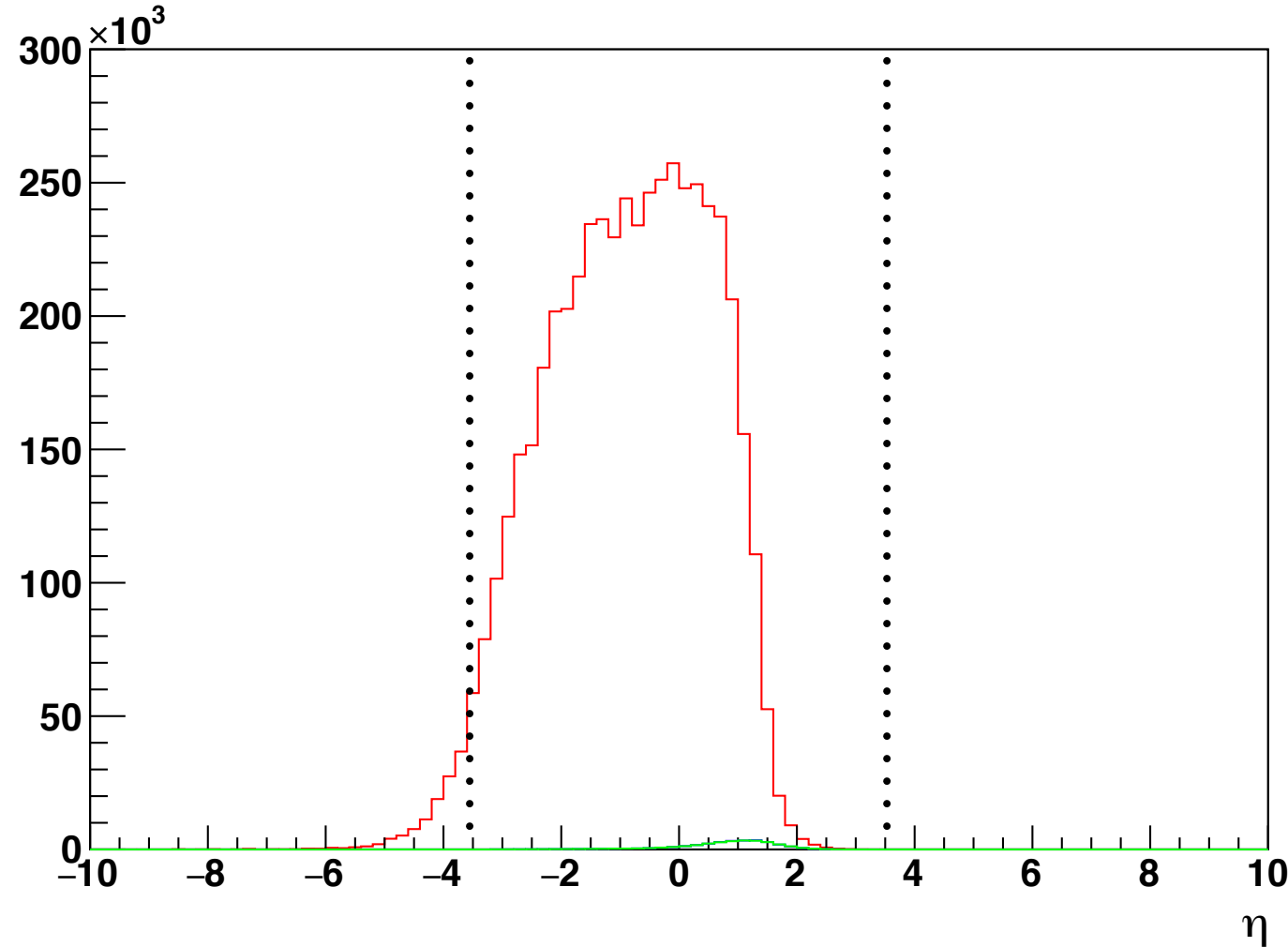


new acceptance: 18 x 275

$Q^2 > 1 \text{ GeV}^2$ ● DVCS: e'
 $0.01 < y < 0.95$ ● DVMP π^0 : e'

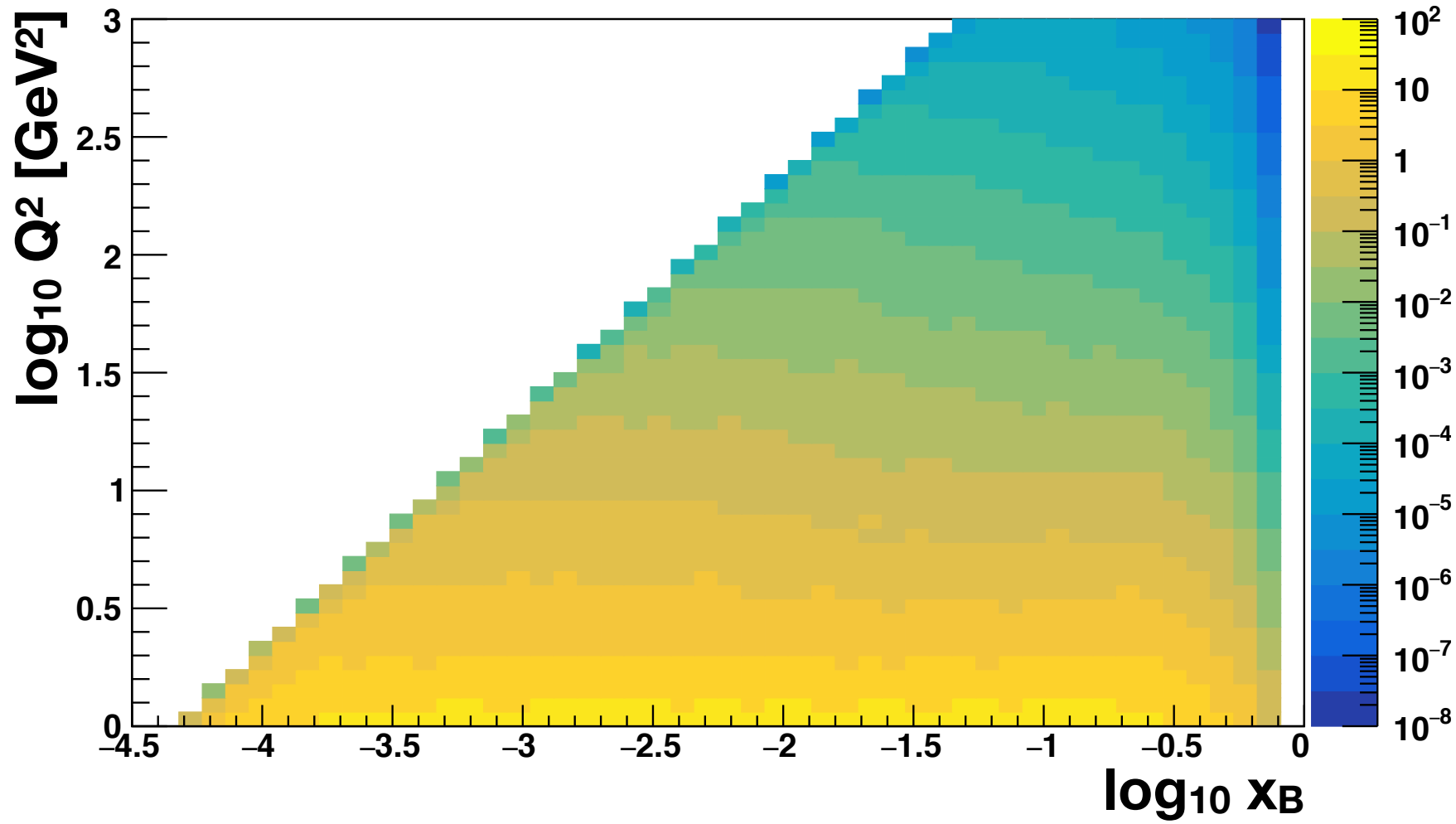


$Q^2 > 1 \text{ GeV}^2$ ● DVCS: γ
 $0.01 < y < 0.95$ ● DVMP π^0 : π^0
 ● DVMP π^0 : $\pi^0 \rightarrow \gamma\gamma$
 (histogram scaled by 0.5)

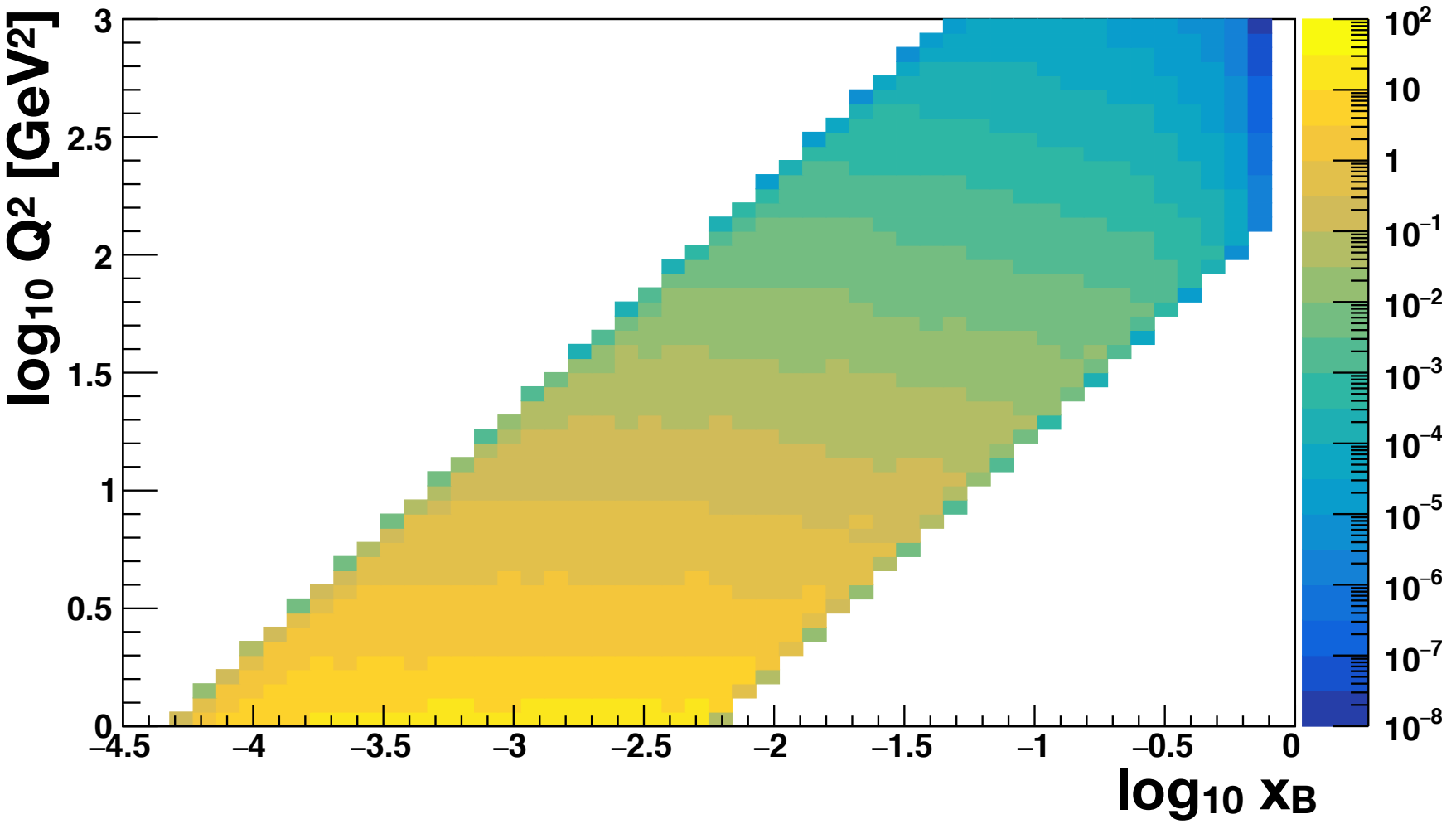


new acceptance: 18 x 275

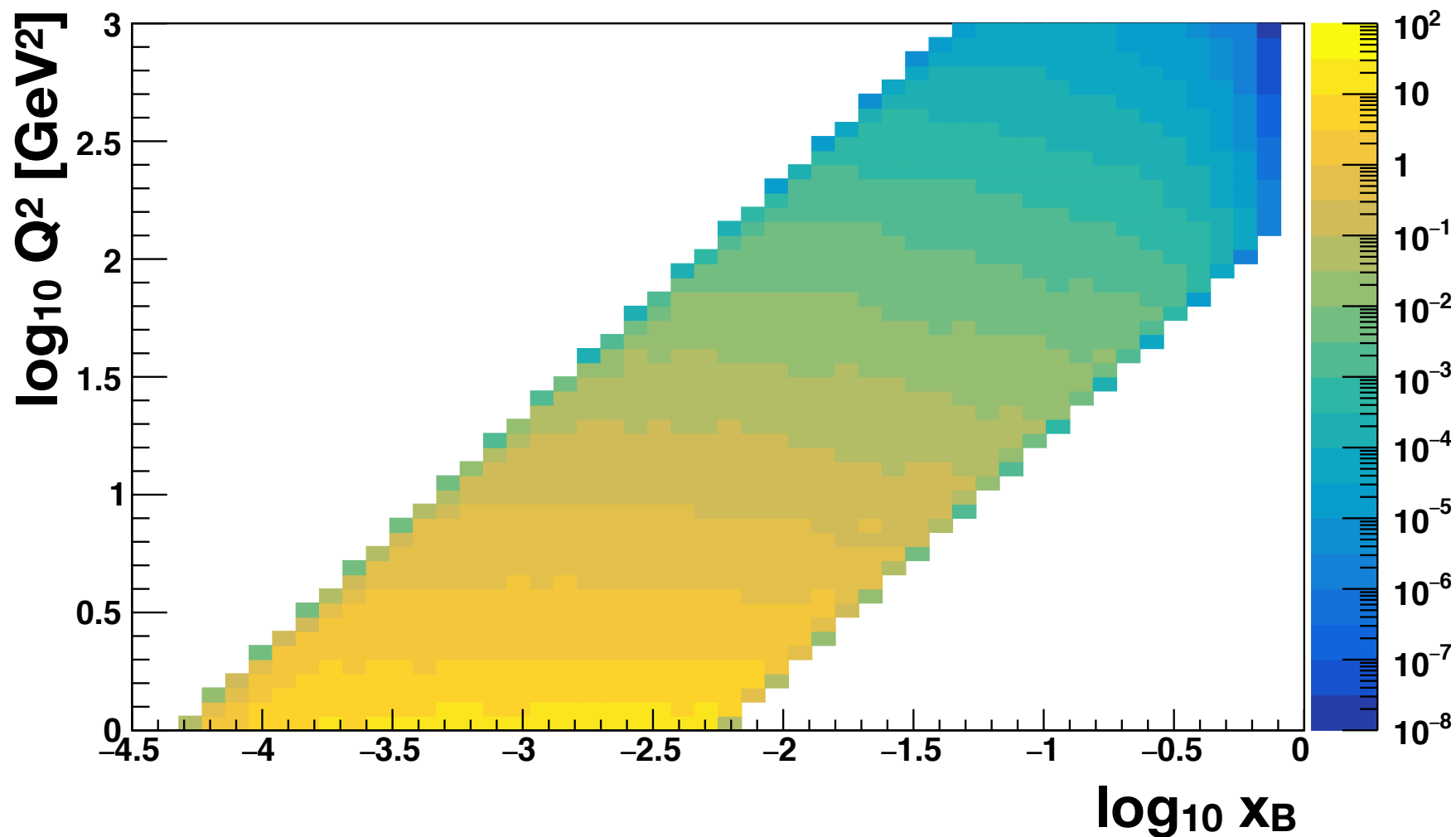
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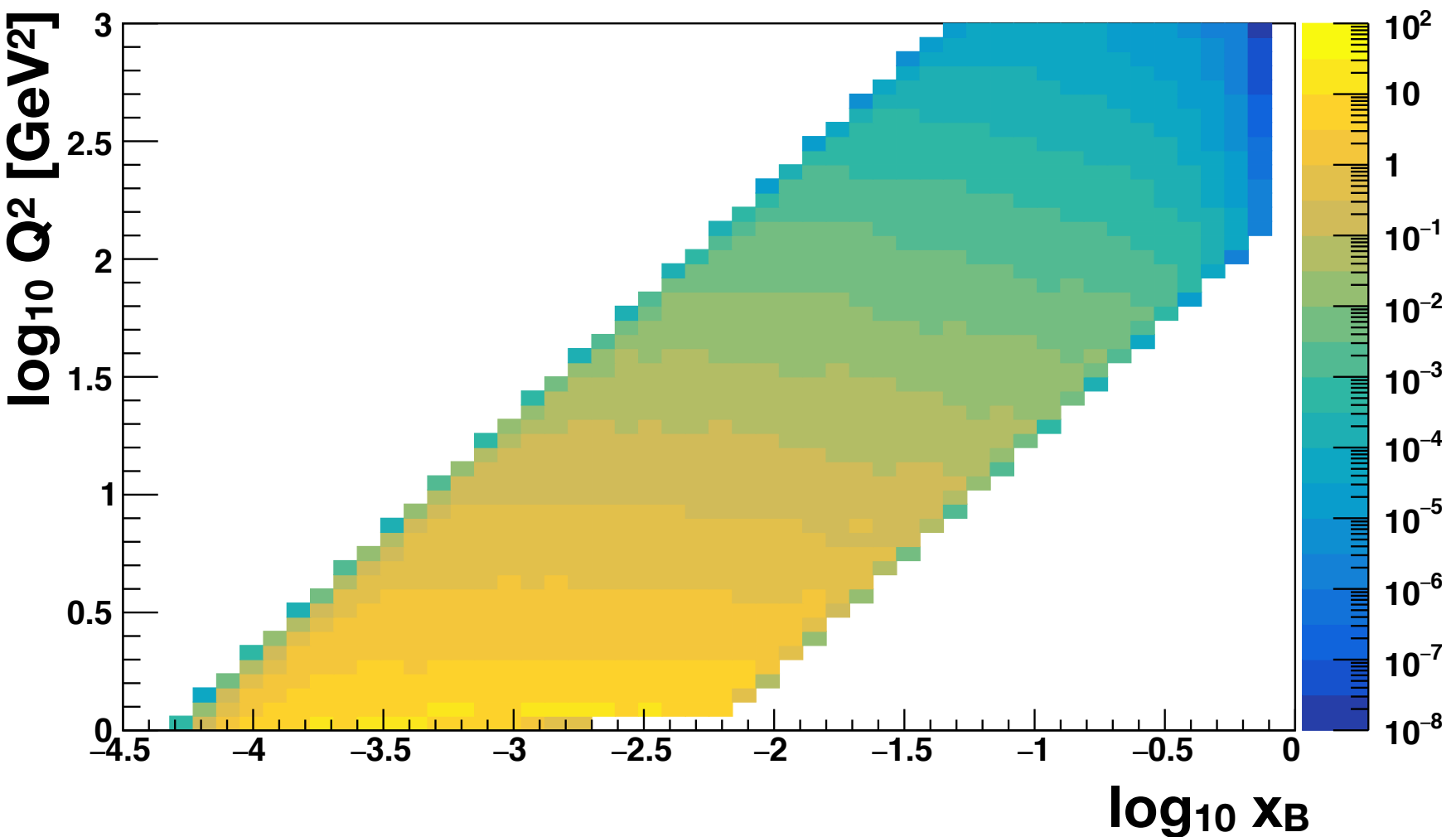
$0.01 < y < 0.95$



$0.01 < y < 0.95$ AND old acceptance

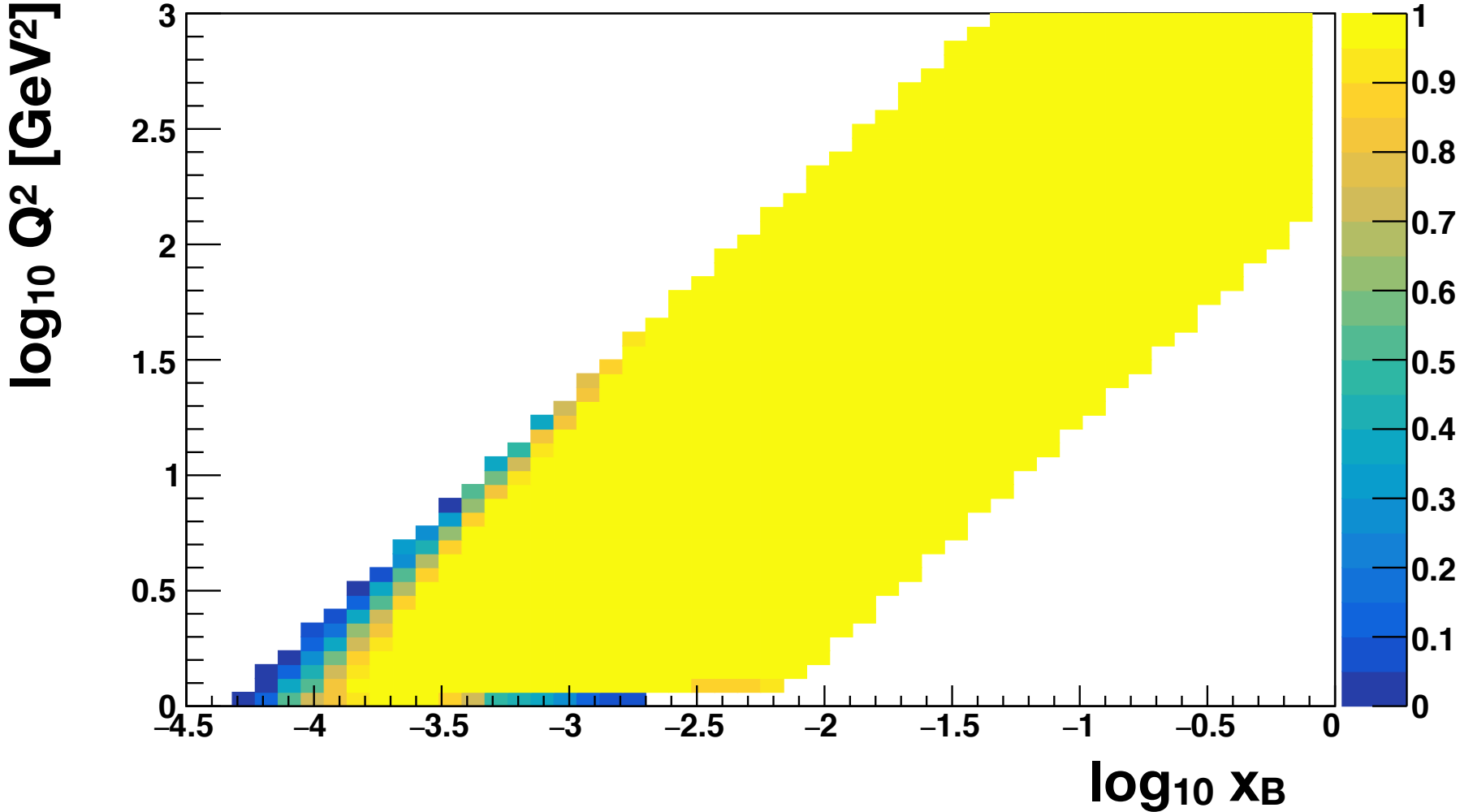


$0.01 < y < 0.95$ AND old acceptance AND $|\eta| < 3.5$

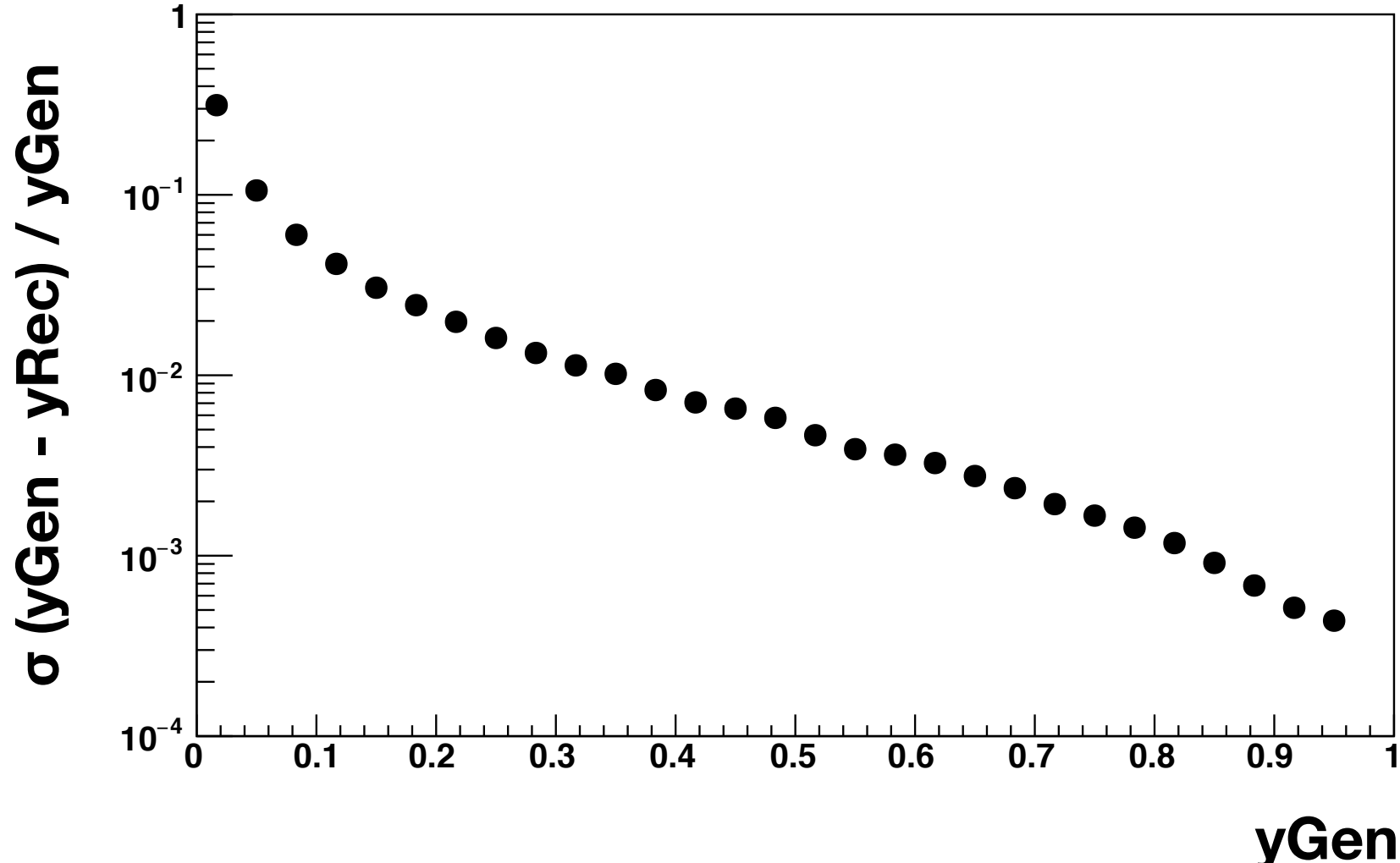
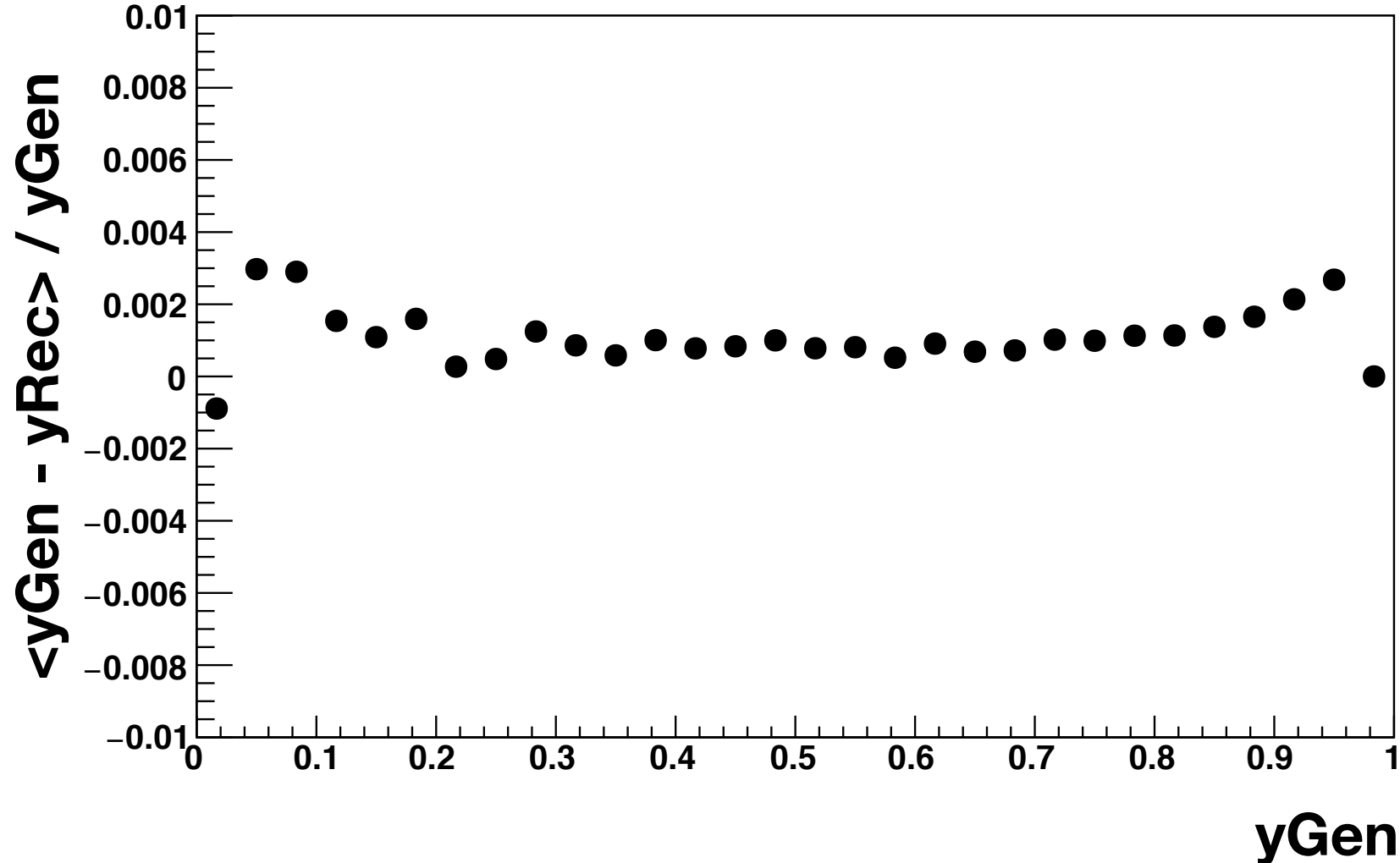
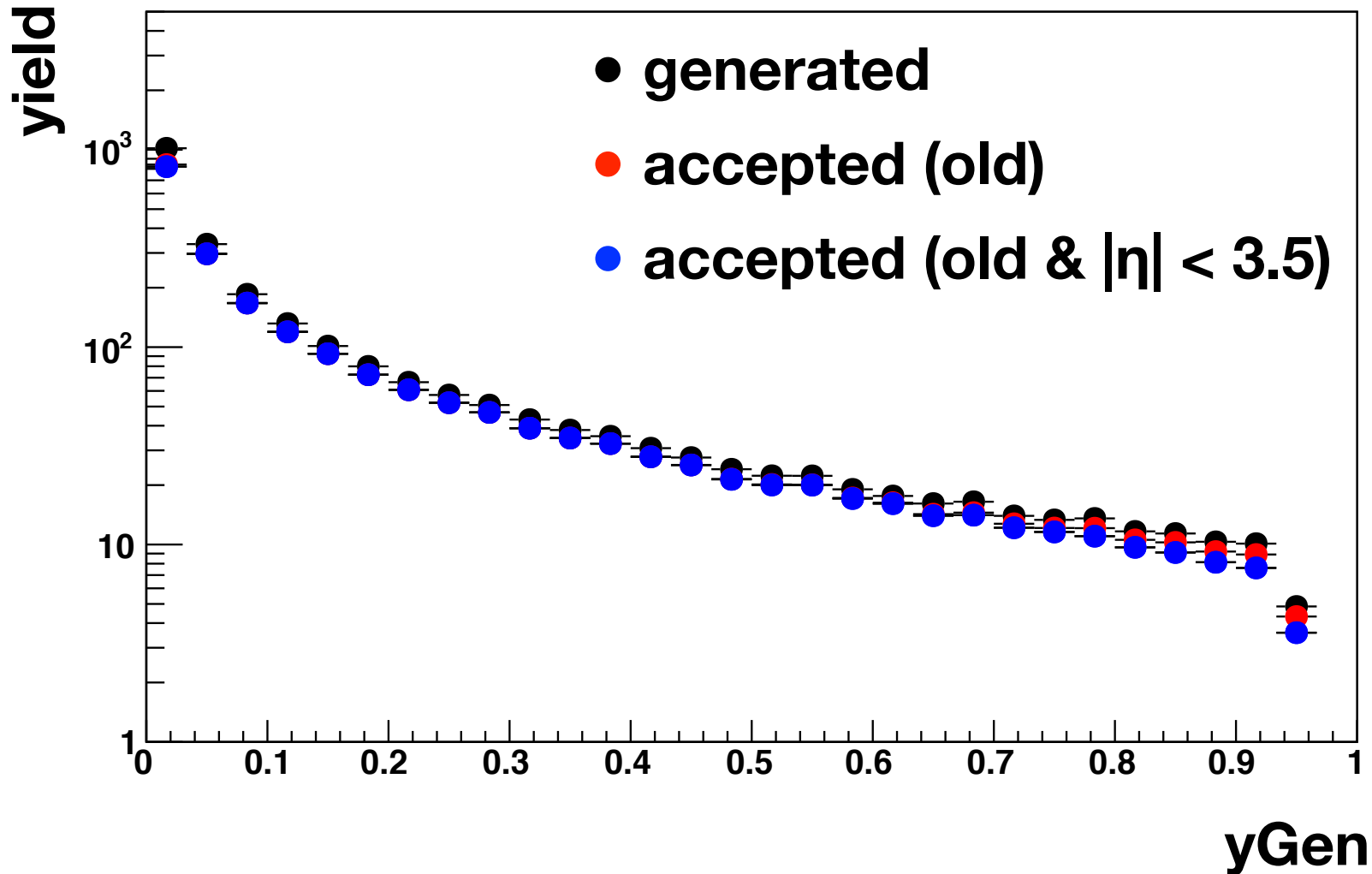


new acceptance: 18 x 275

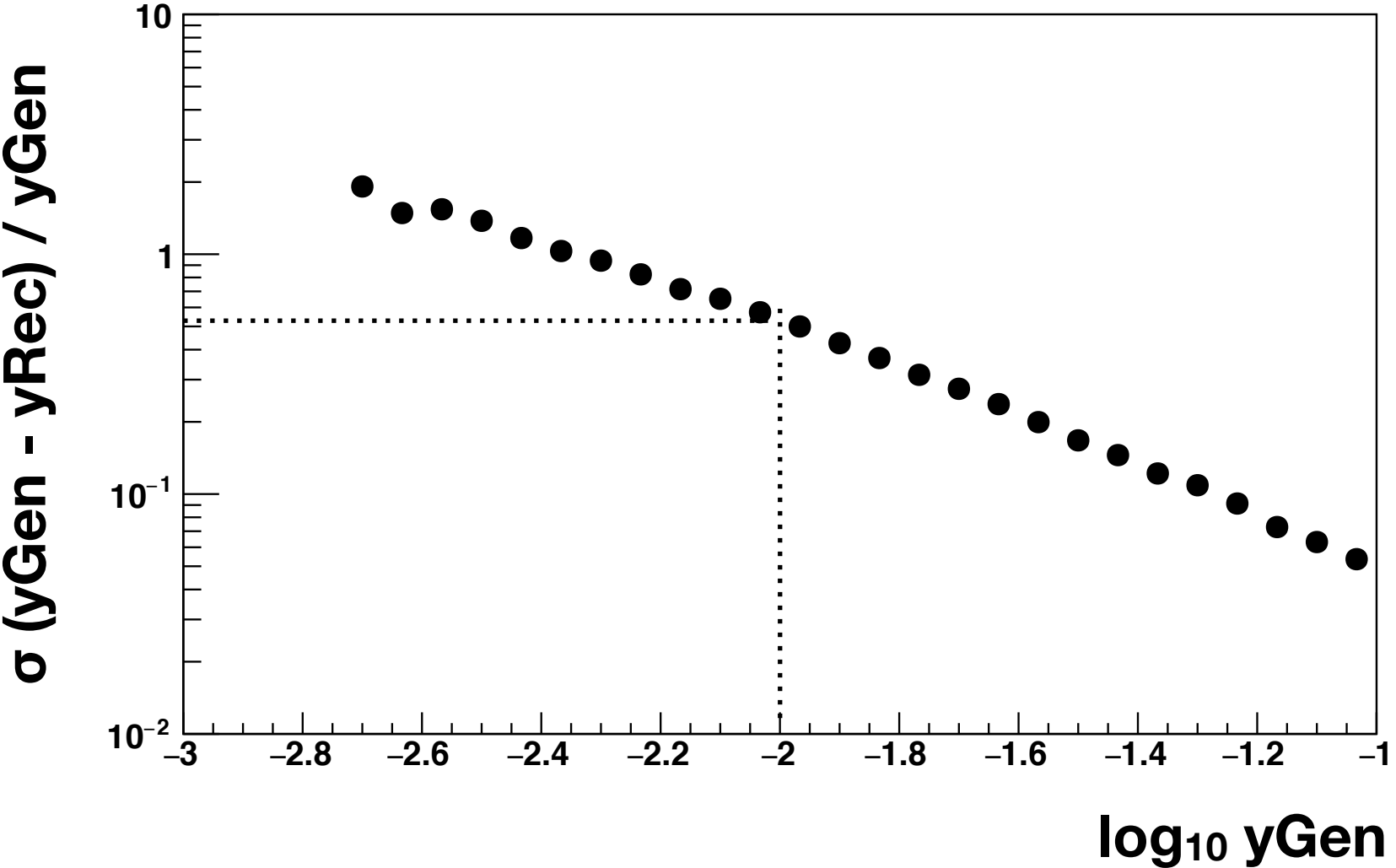
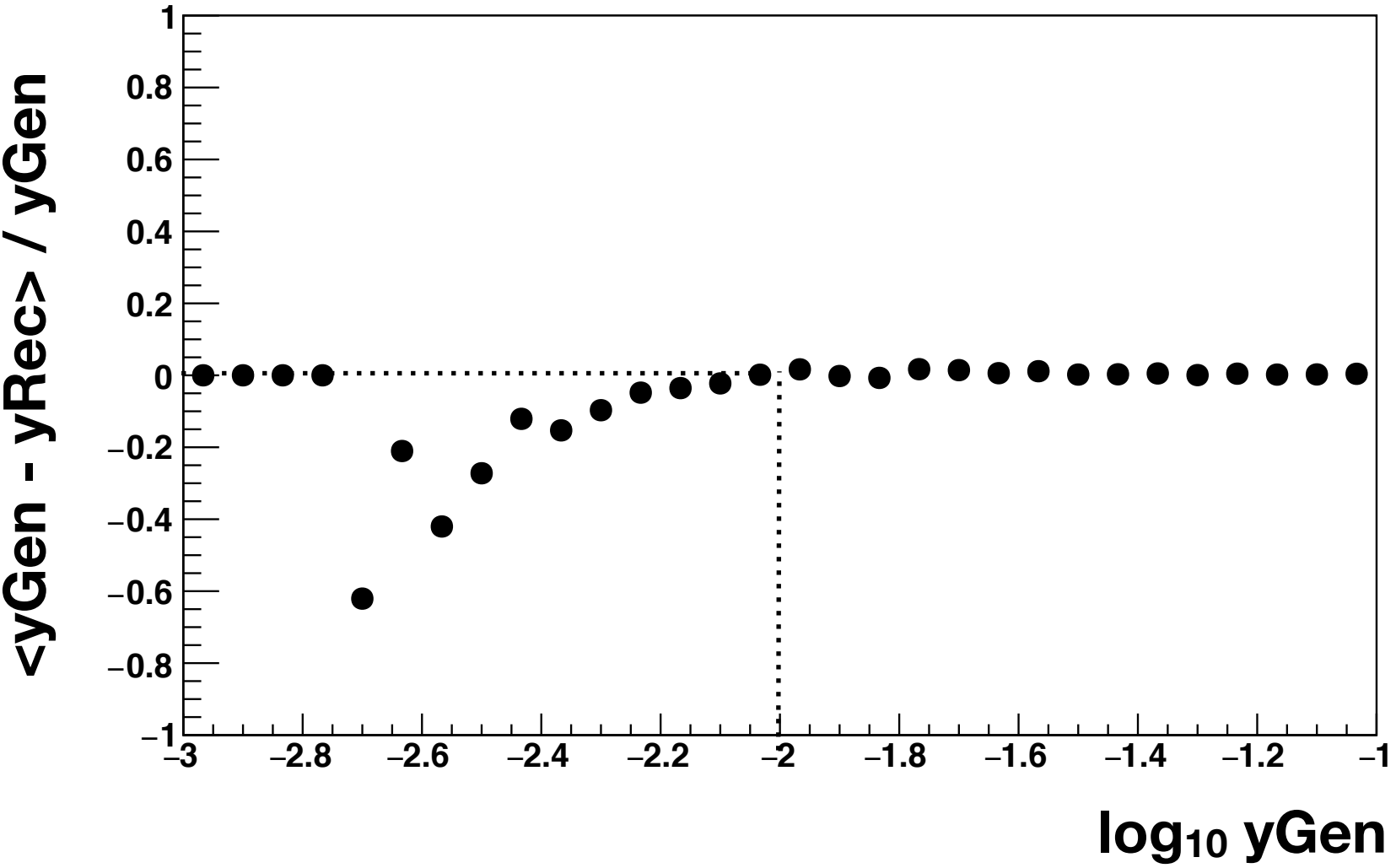
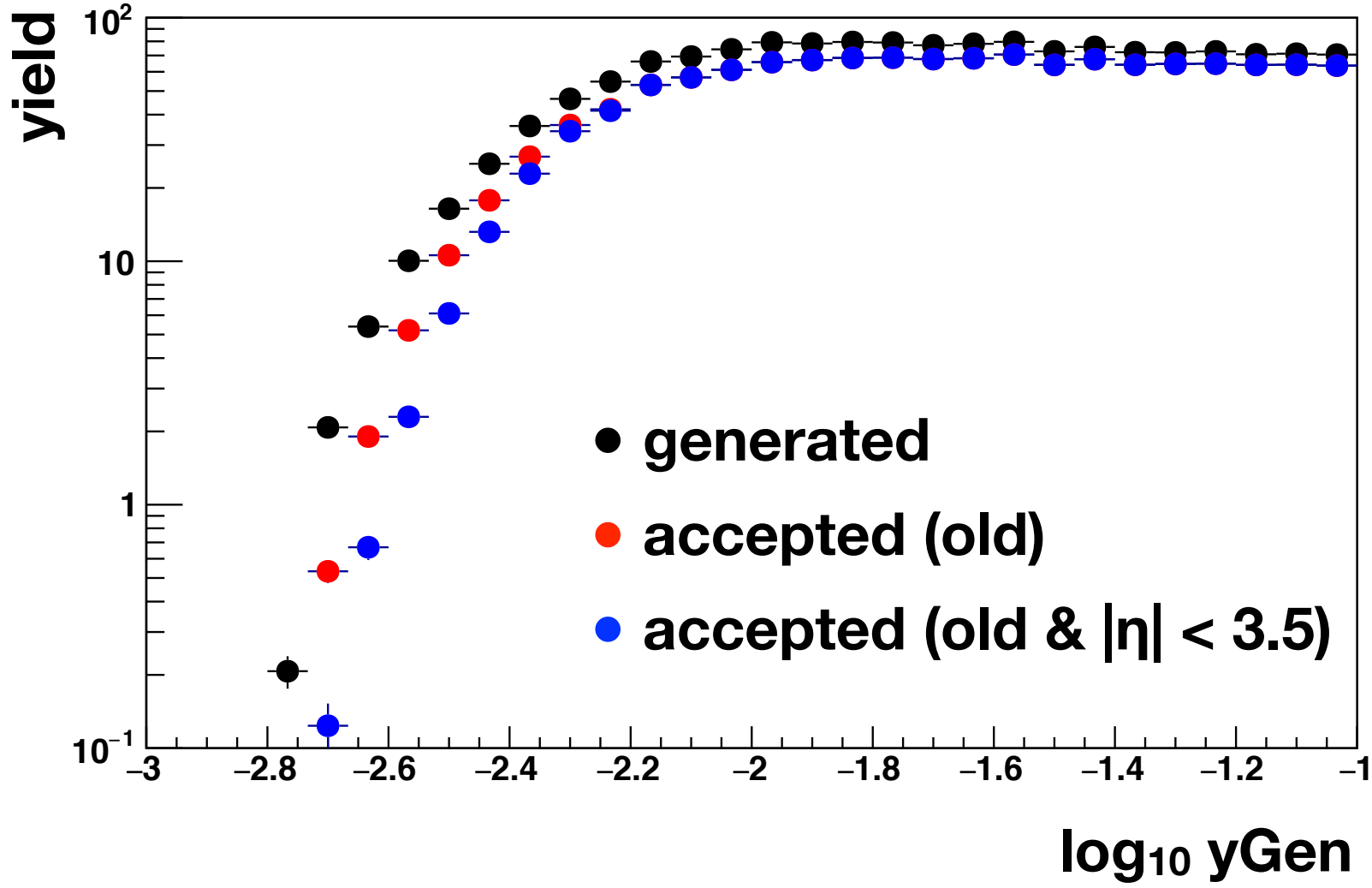
(0.01 < y < 0.95 AND old acceptance AND |η| < 3.5) /
(0.01 < y < 0.95 AND old acceptance)



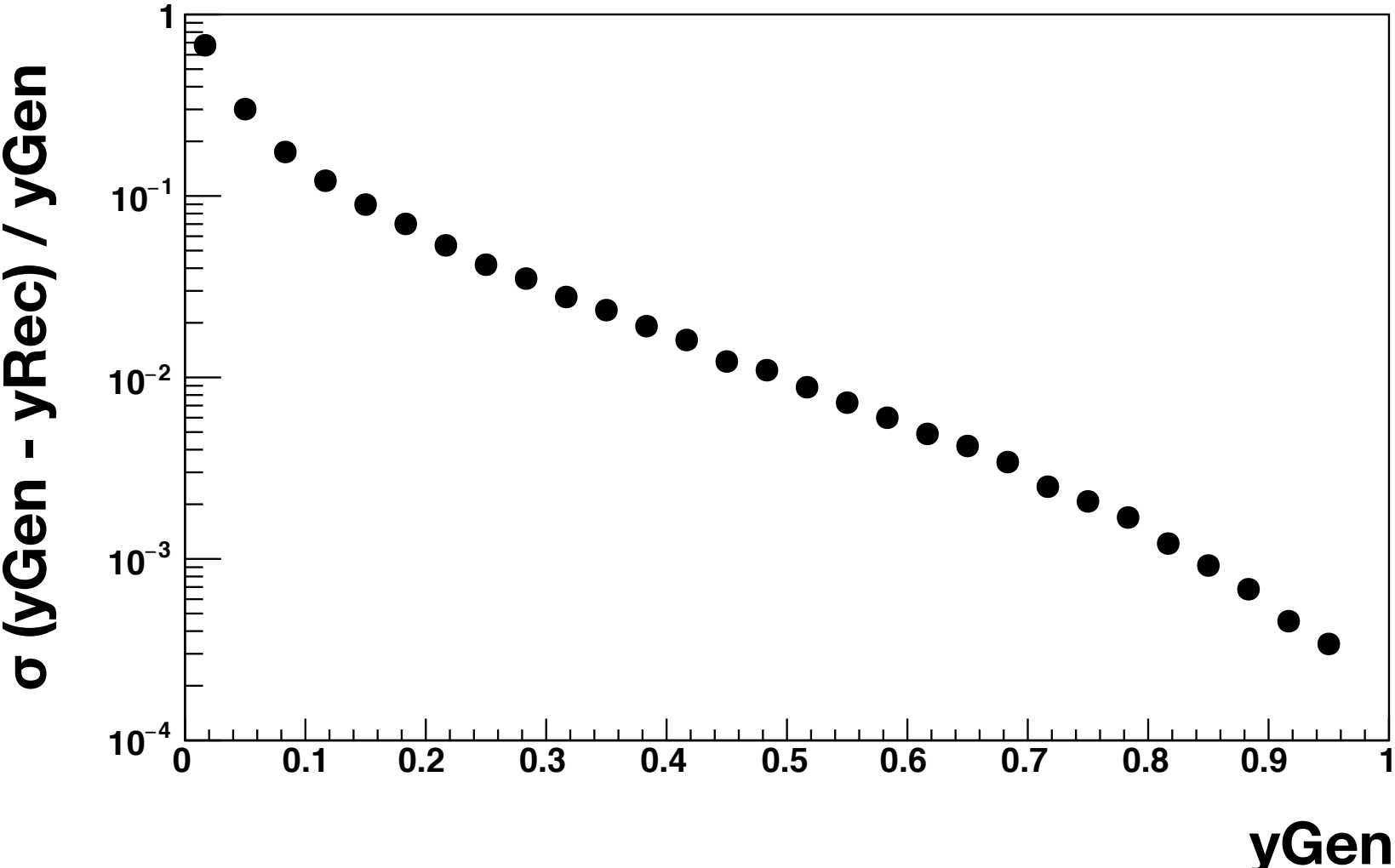
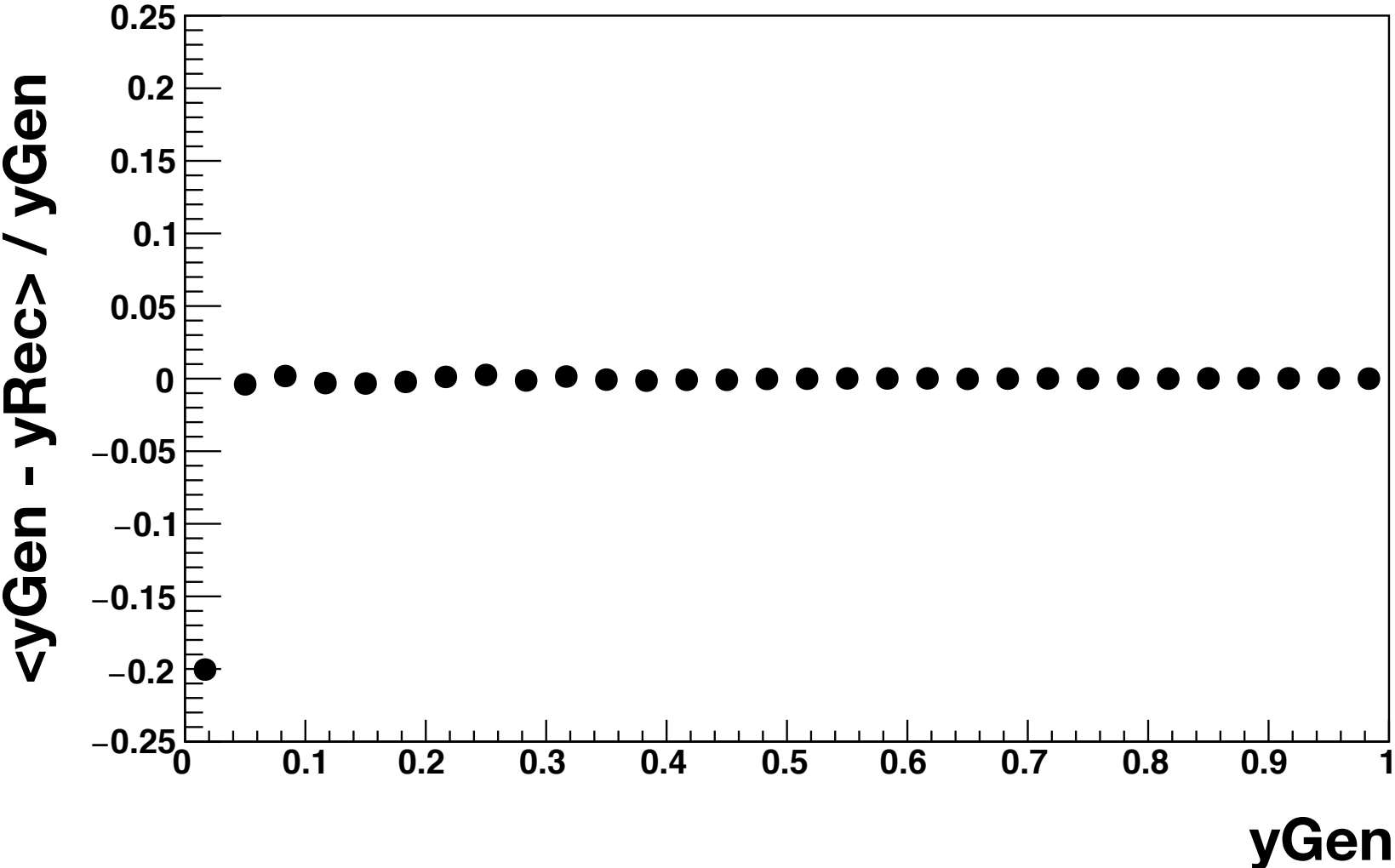
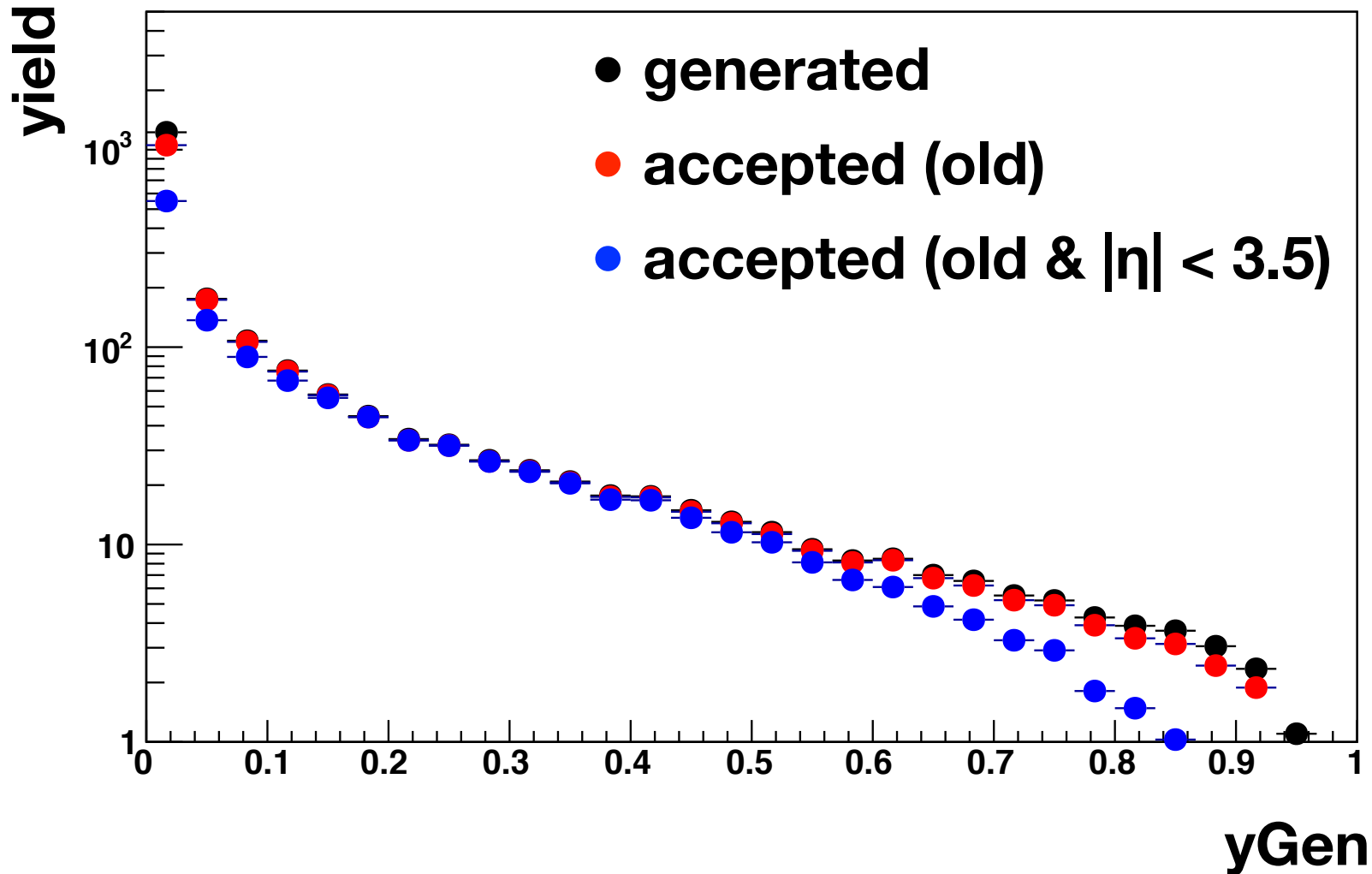
smearing of y : 5 x 41



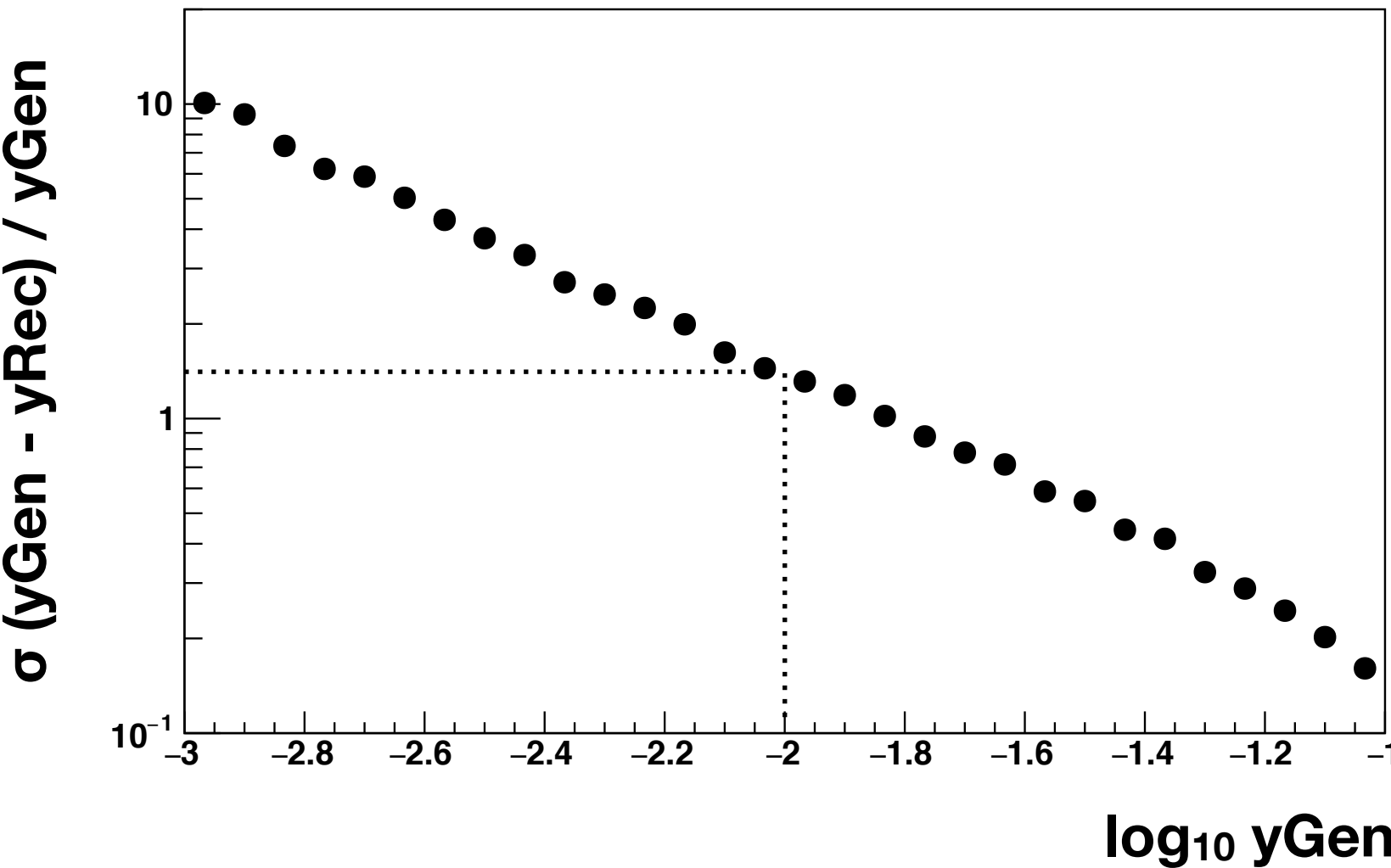
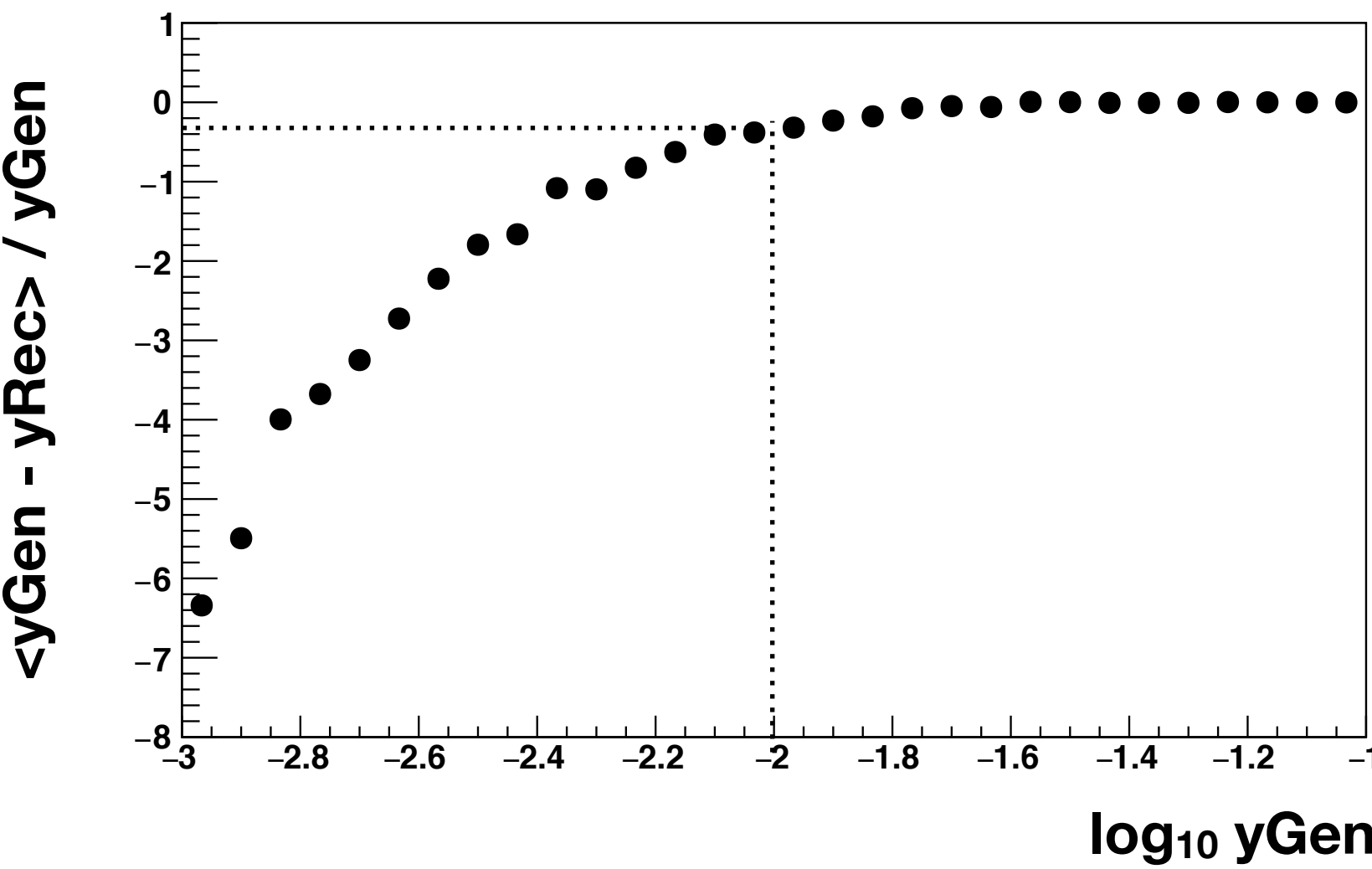
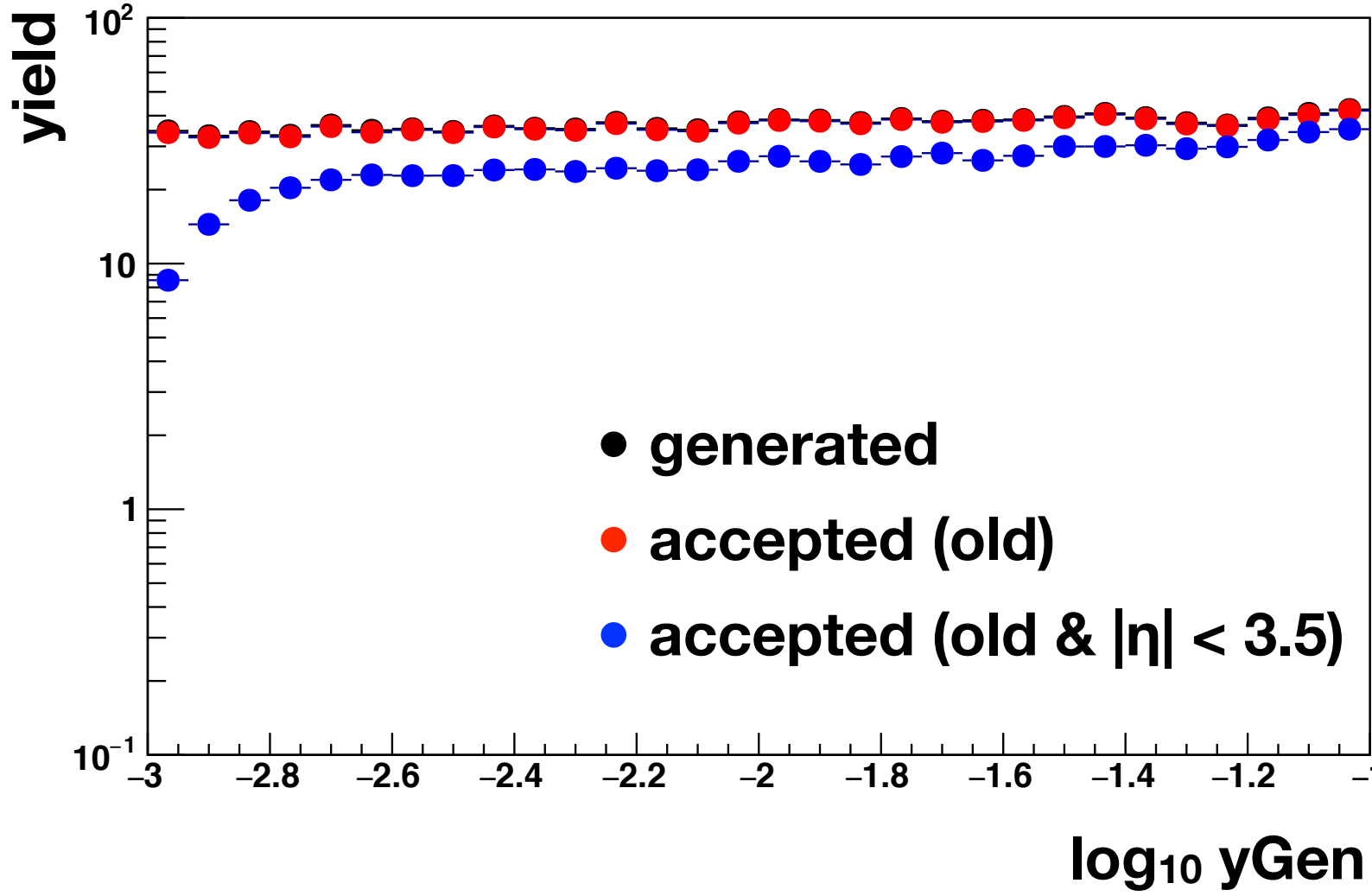
smearing of y : 5 x 41 (zoom)



smearing of y: 18 x 275



smearing of y : 18 x 275 (zoom)



Conclusions

- new acceptance $|\eta| < 3.5$ seems to have a small effect w.r.t. $|\eta| < 4.5$
(at least for $Q^2 > 1 \text{ GeV}^2$ DVCS and DVMP π^0 analyses)
- default y -cut seems to reasonable - to be tuned in future analyses
- reliable estimations for other methods (double angle, Jacquet-Blondel) may require introduction of position smearing