

Exclusive pi0 - status report

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on behalf of PARTONS group

Exclusive/YR meeting, 10/07/2020

Motivation

Exclusive π^0 production:

- source of information for polarised and transversity GPDs
- source of background to DVCS
- source of the most energetic π^0 s (qualitative statement)

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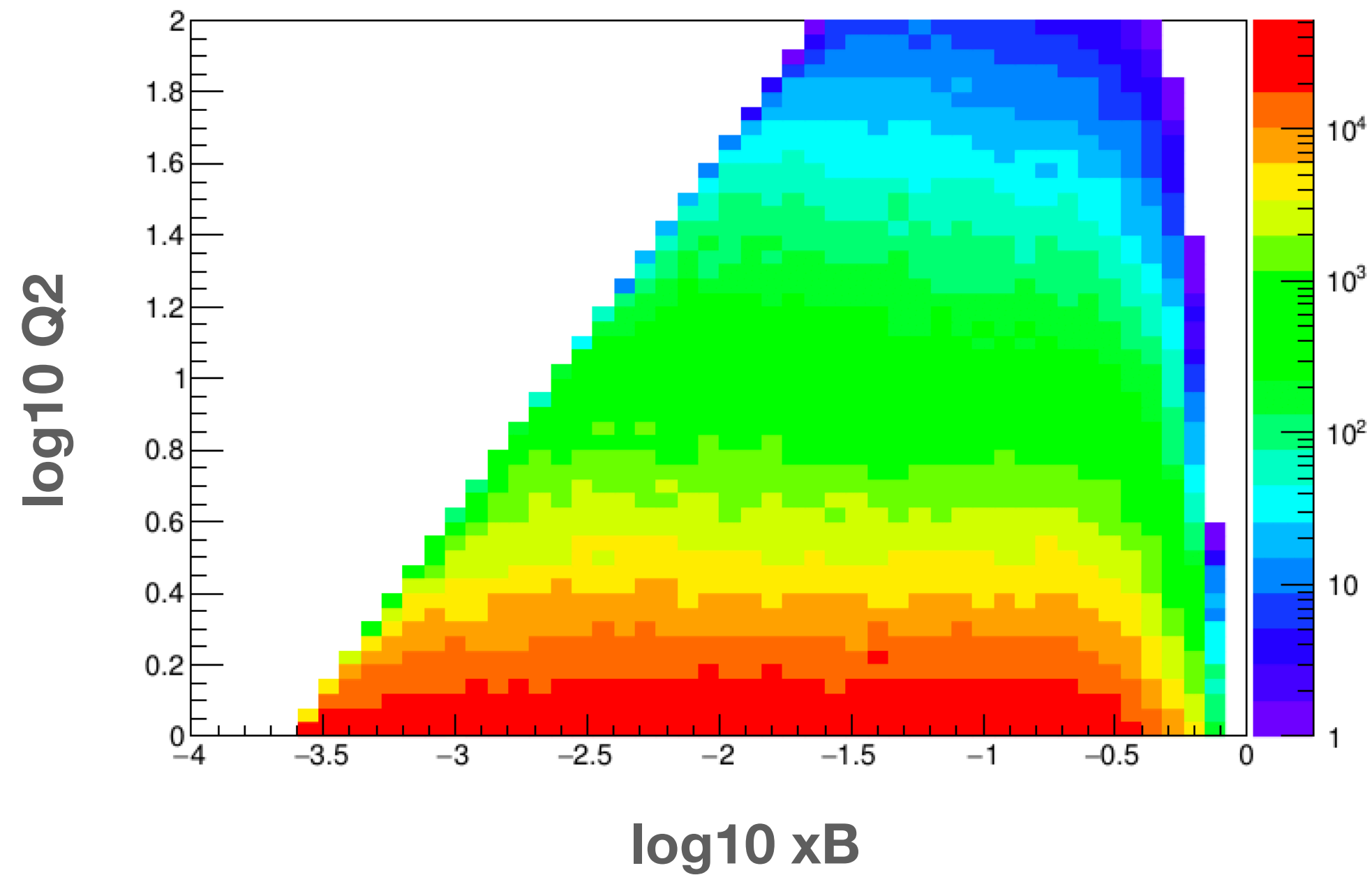
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Analysis:

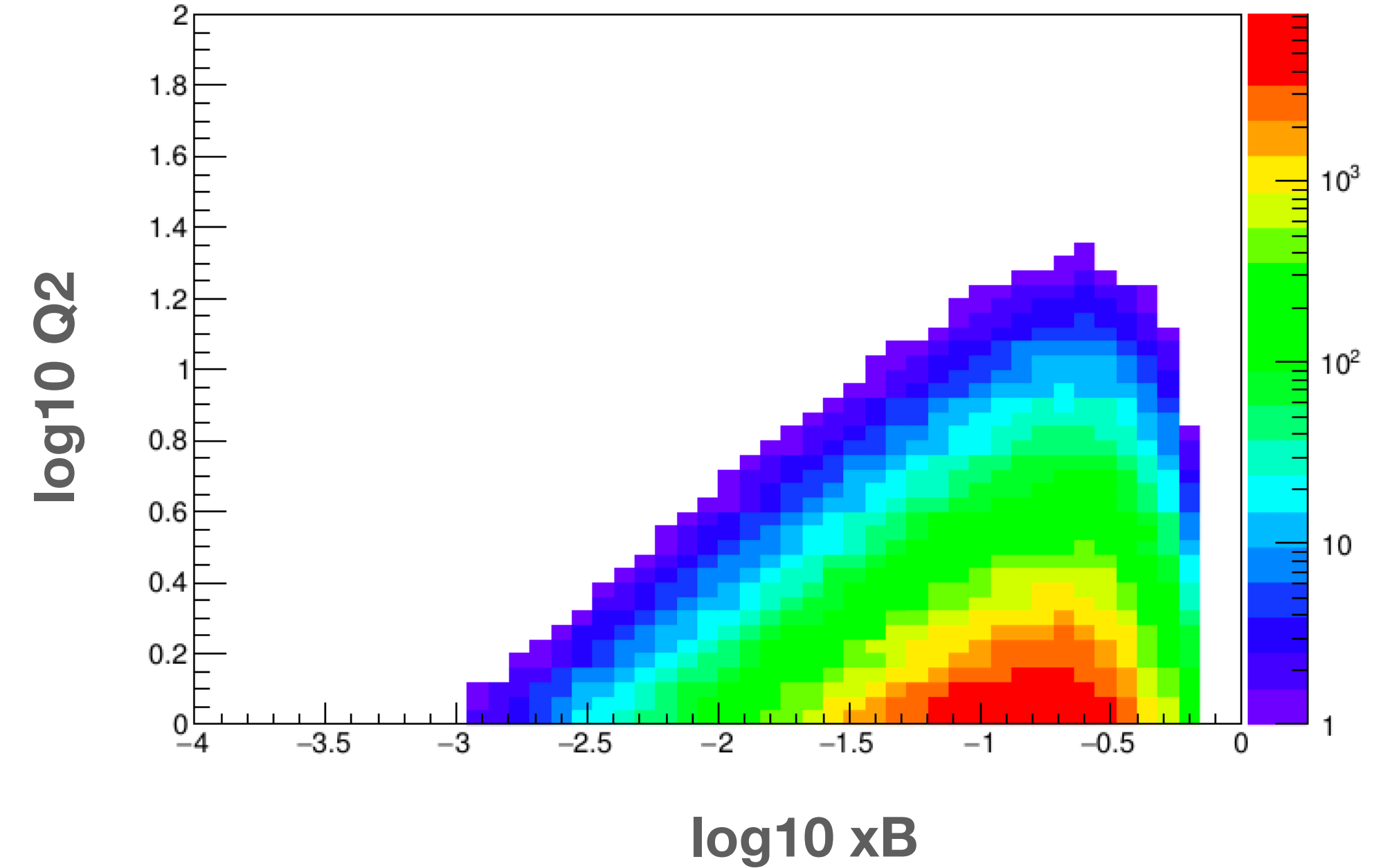
- Goloskokov-Kroll model implemented in PARTONS (see Kemal's talk, June, 12th)
- toy MC developed
 - suitable for both DVCS and π^0
 - implementation of other particles straightforward
 - based on x-sec. tables \rightarrow we can easily accommodate other models
 - evaluation of 4-momenta + x-sec.
- these slides contain first (**preliminary**) results
 - to be done: overall x-check., selection of suitable GPD parametrization

Yields as function of xB vs. Q2

DVCS



Pi0



Kinematic range:
 $10^{-4} < x_B < 0.7$
 $1 \text{ GeV}^2 < Q^2 < 1000 \text{ GeV}^2$
 $0 < |t| < 1 \text{ GeV}^2$

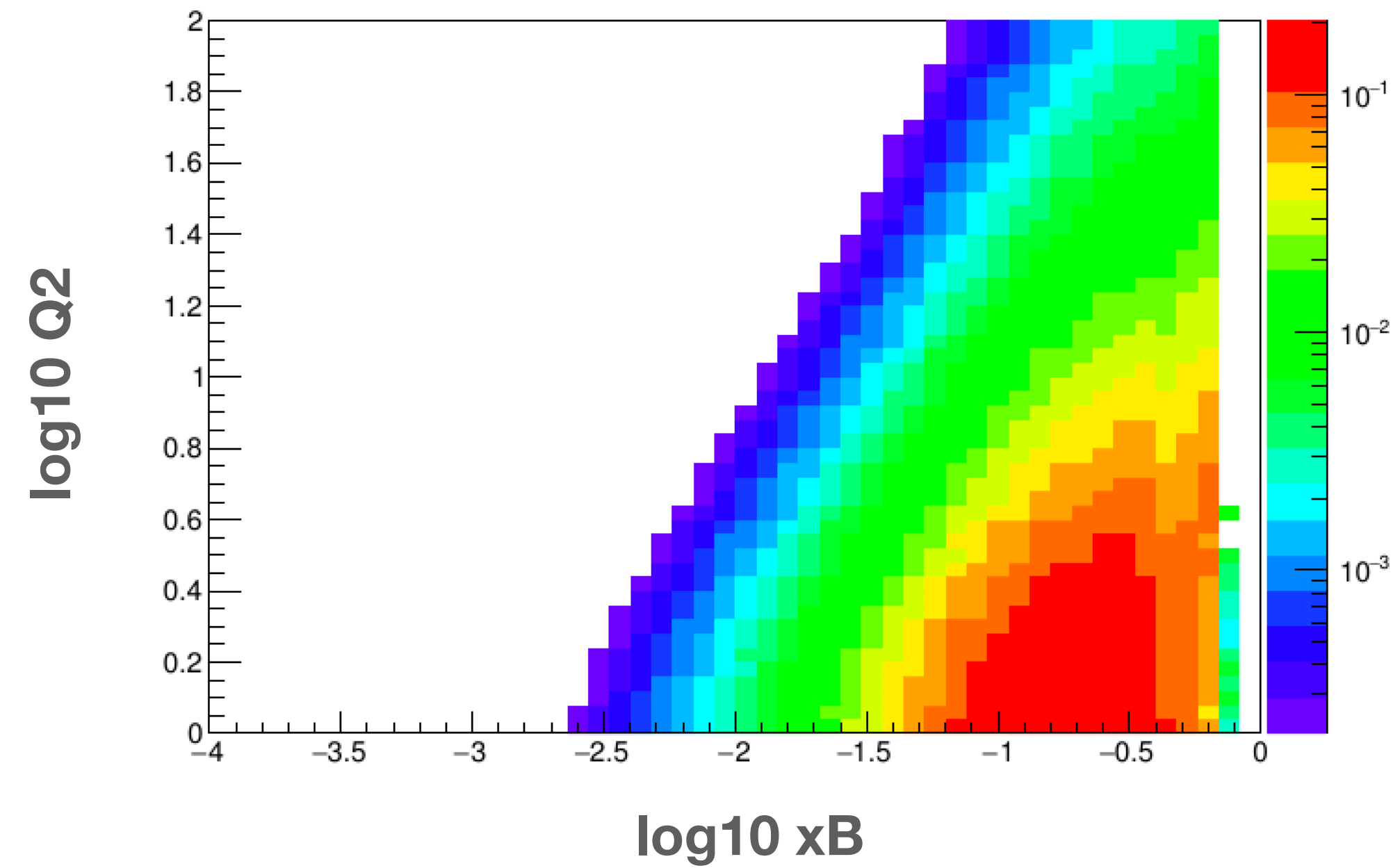
Beam energy:
 $E_e = 10 \text{ GeV}$
 $E_p = 100 \text{ GeV}$

Integrated lumi:
 10 fb^{-1}

Integrated x-sec.:
DVCS: 0.8 nb
Pi0: 0.035 nb

Yields as function of xB vs. Q2

Pi0 / DVCS



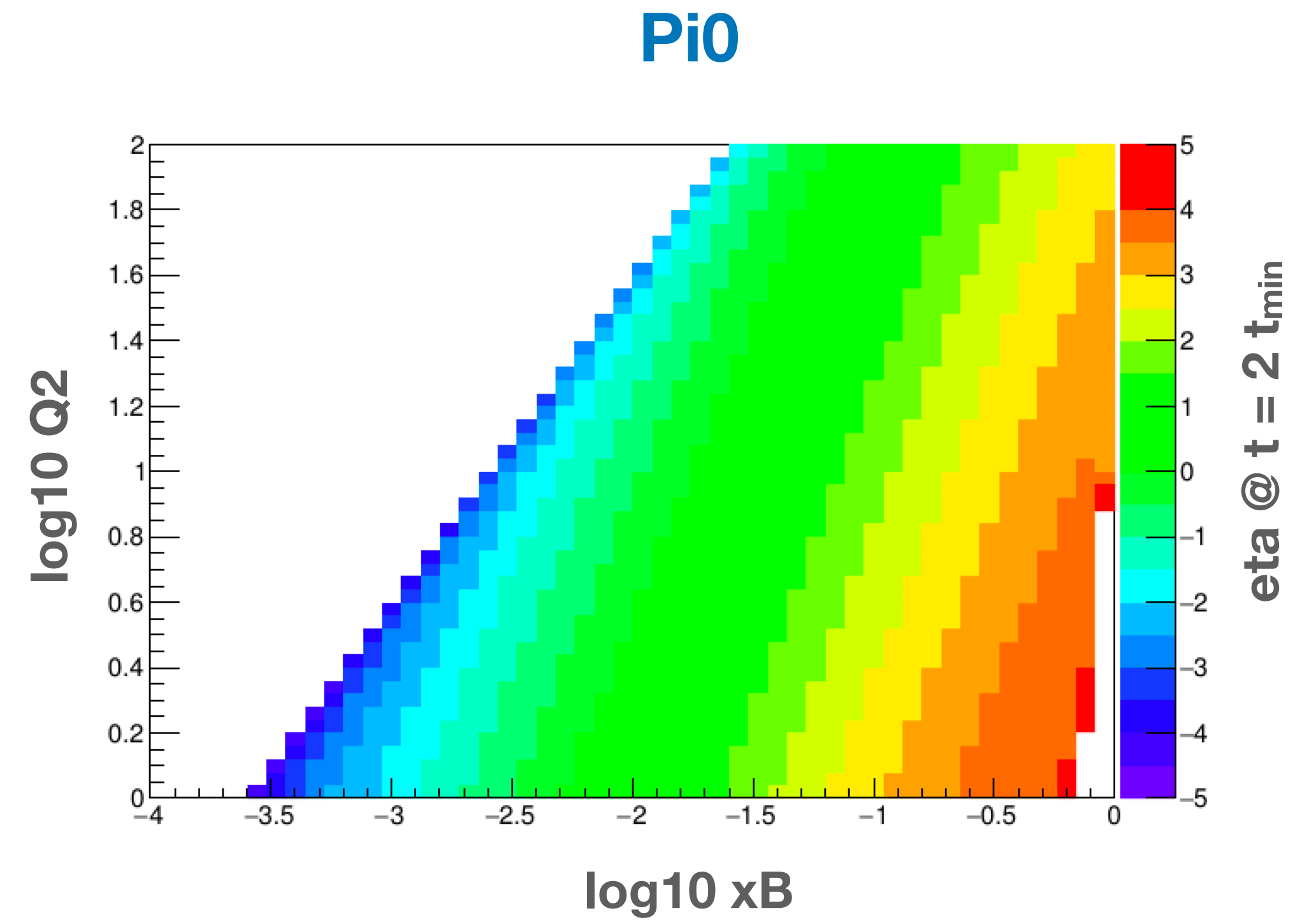
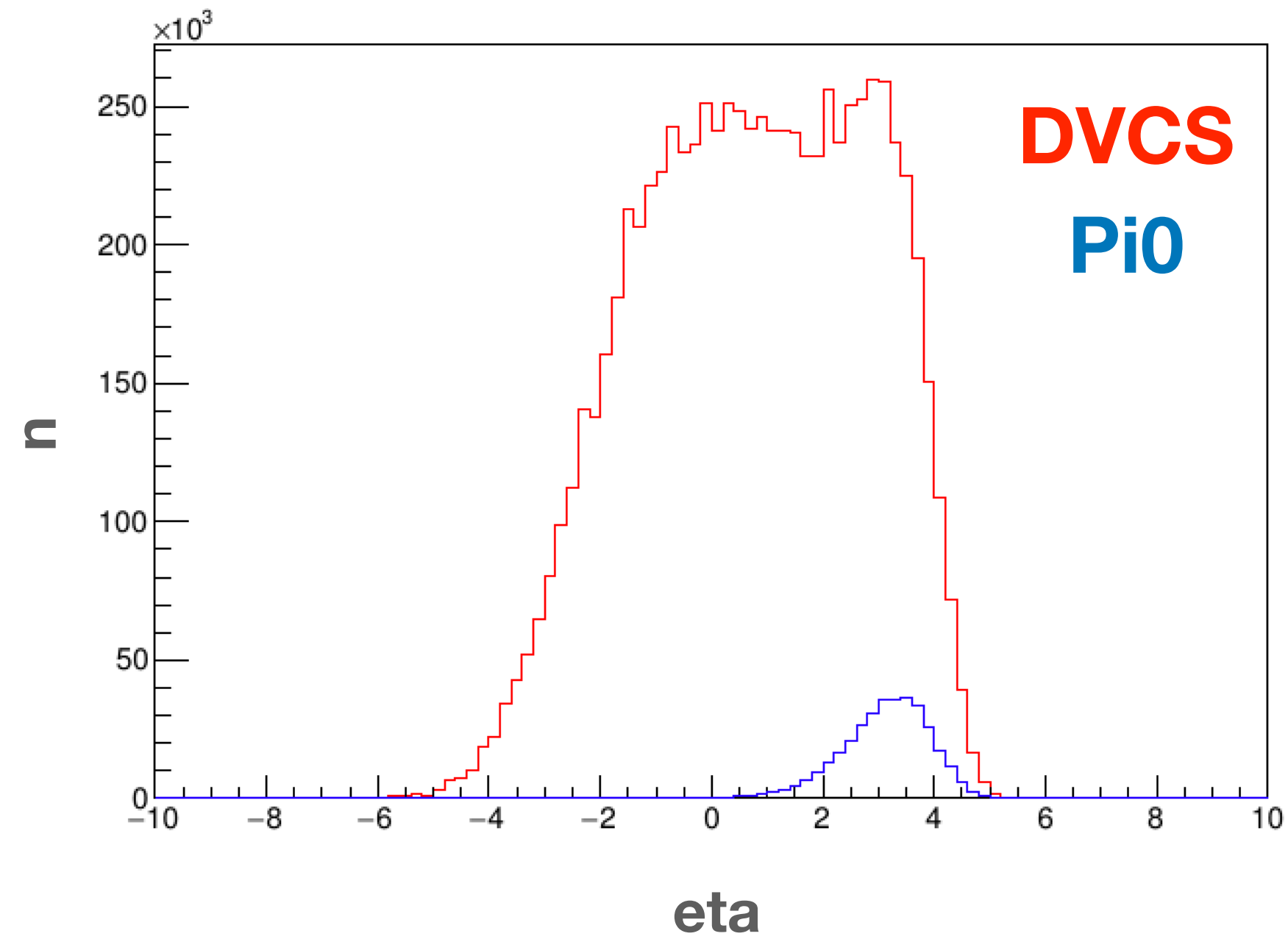
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Yields as function of pseudo-rapidity



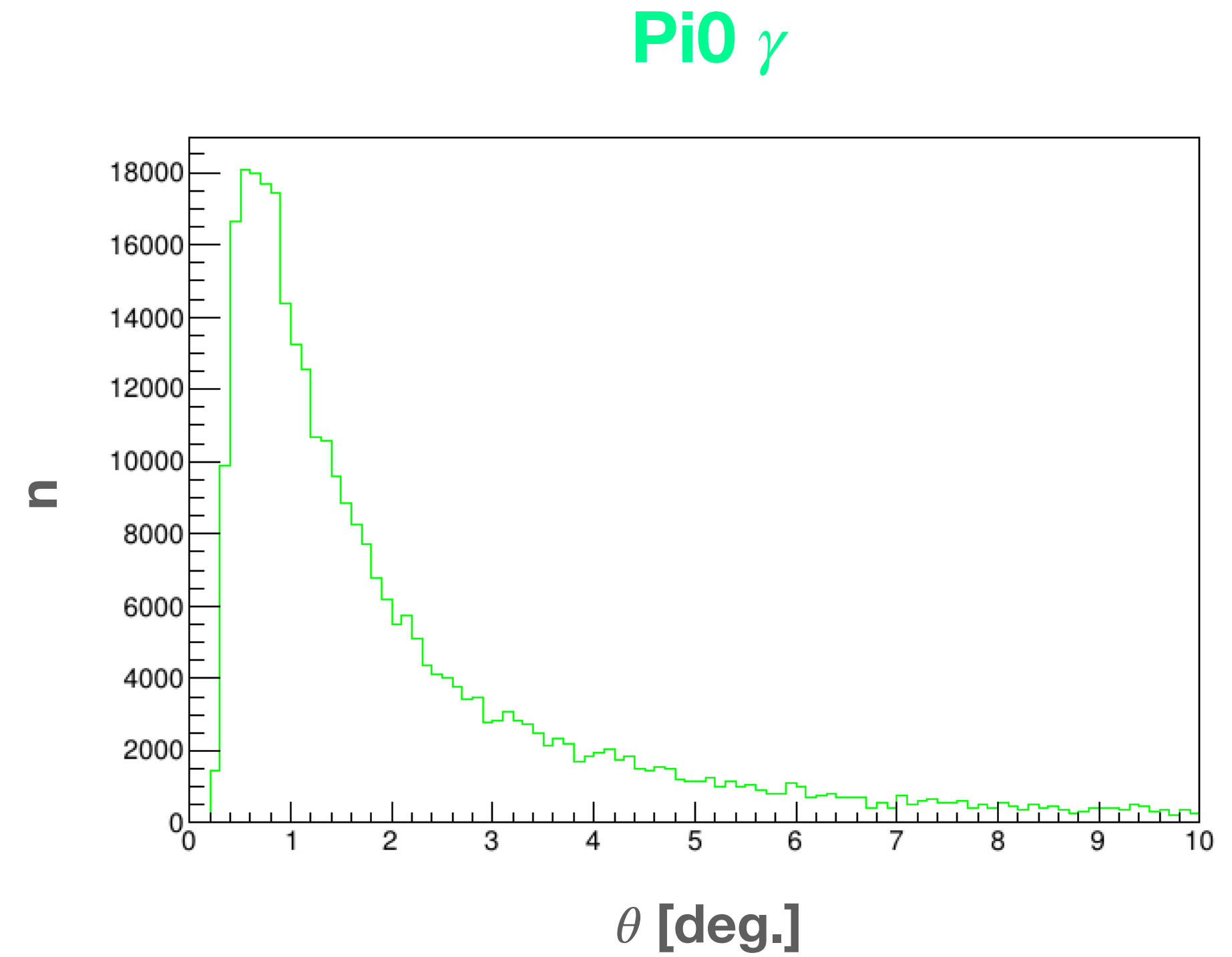
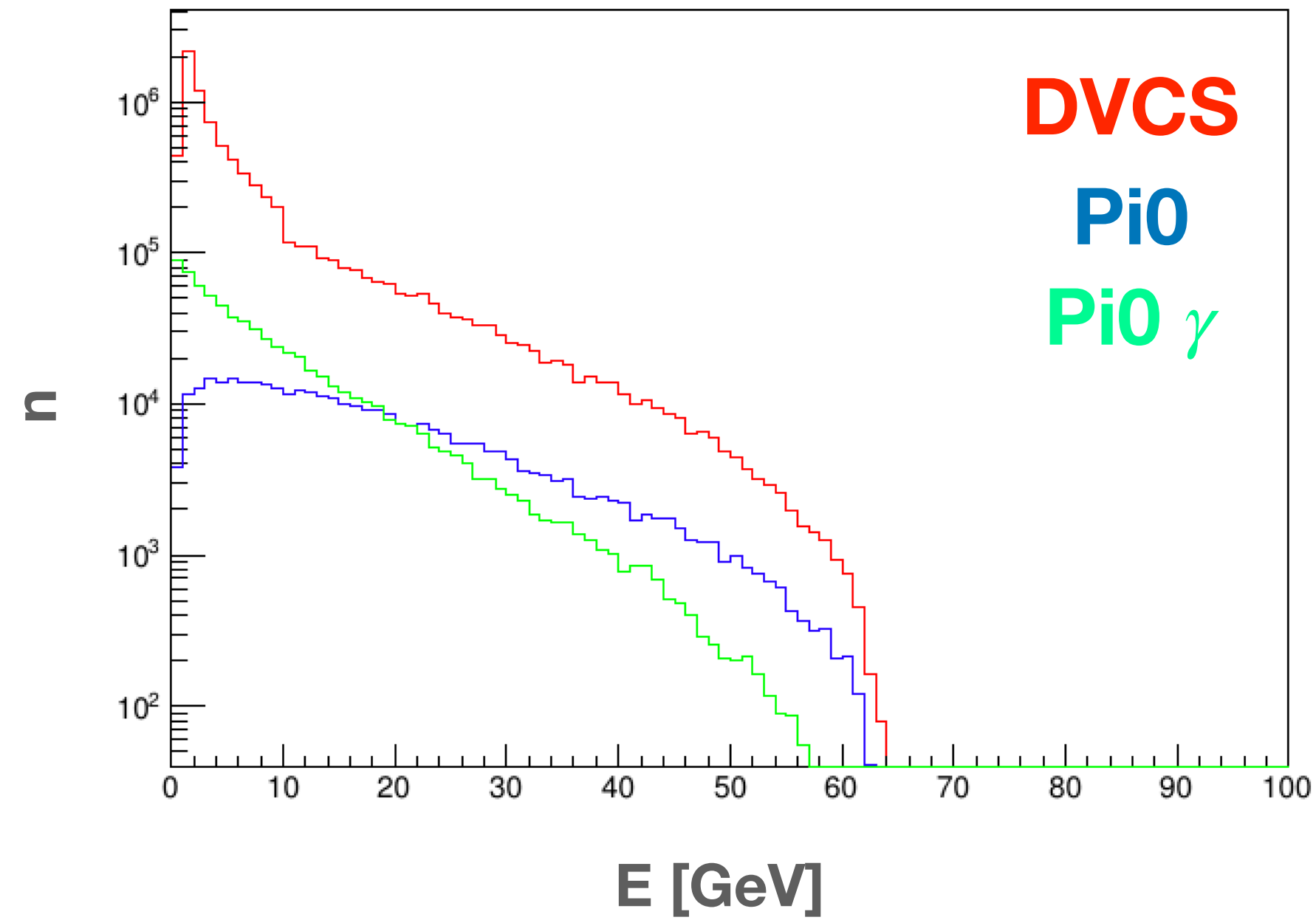
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Energies and opening angle



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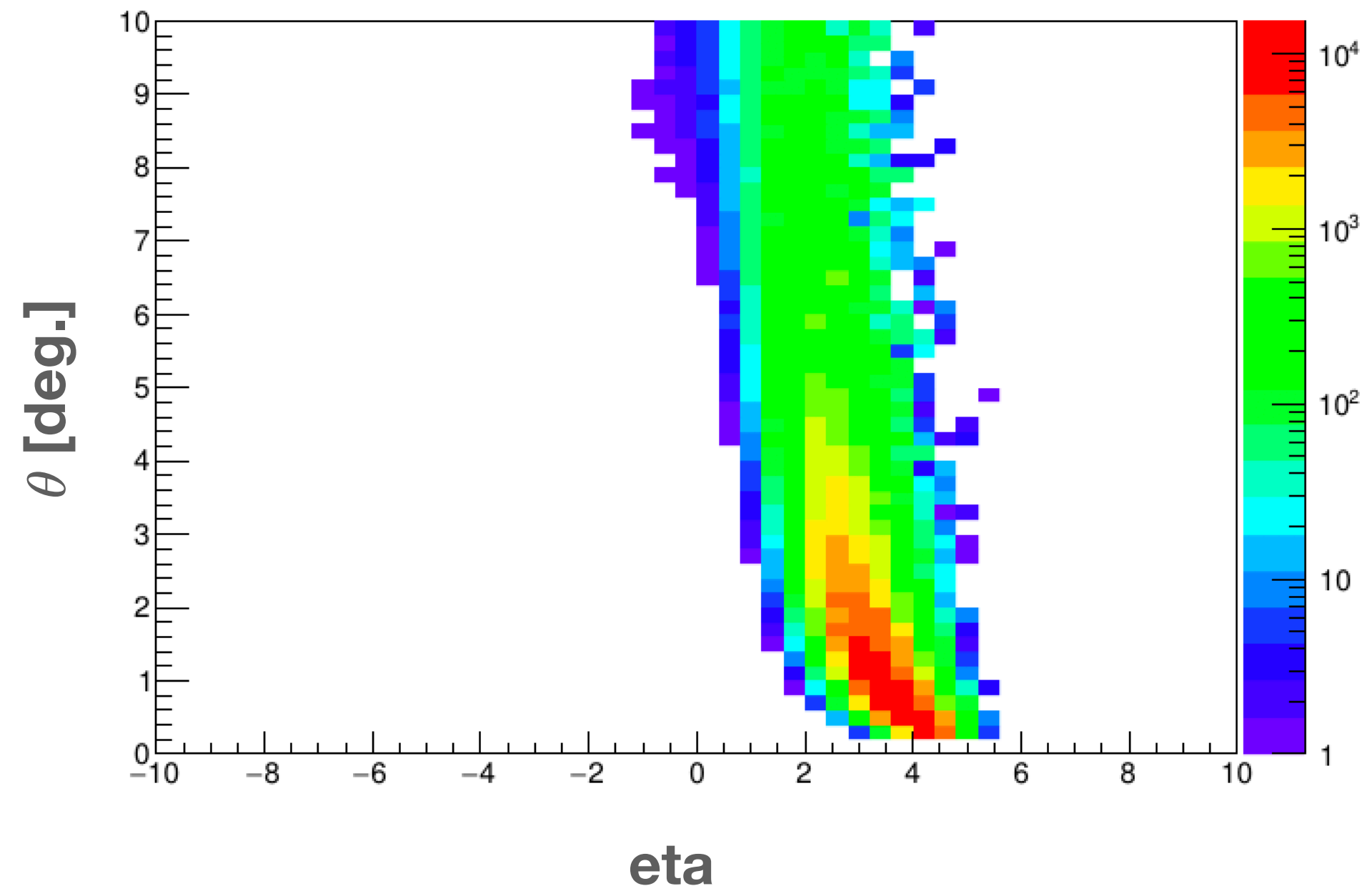
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Integrated lumi:
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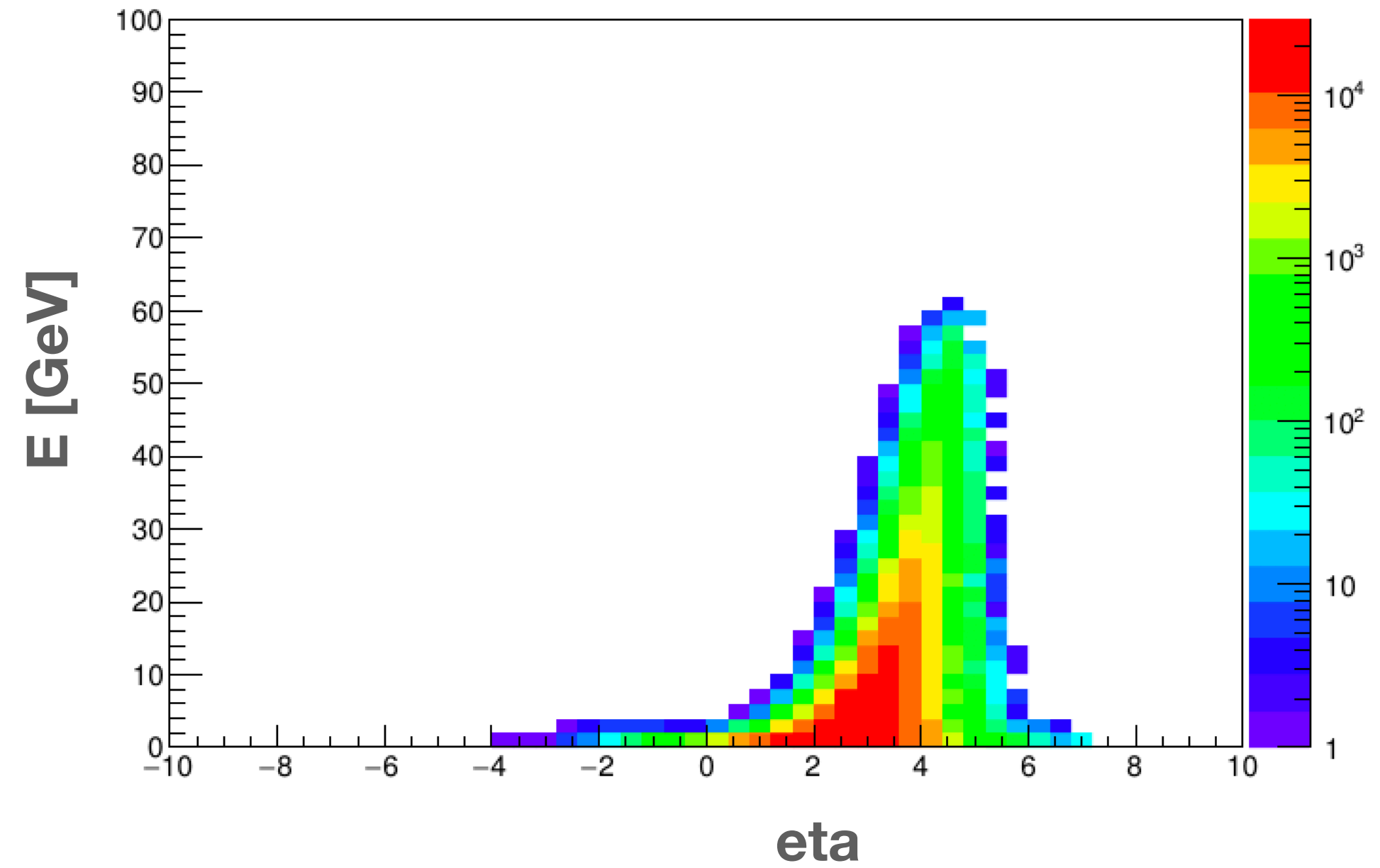
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 DVCS: 0.8 nb
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Energies and opening angle as function of pseudo-rapidity

Pi0 γ



Pi0 γ



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