Gamma jet simulation (4)

silicon meeting 2003/10/01 M.Togawa

- Jet reconstruct argorithm

  -> previous silides

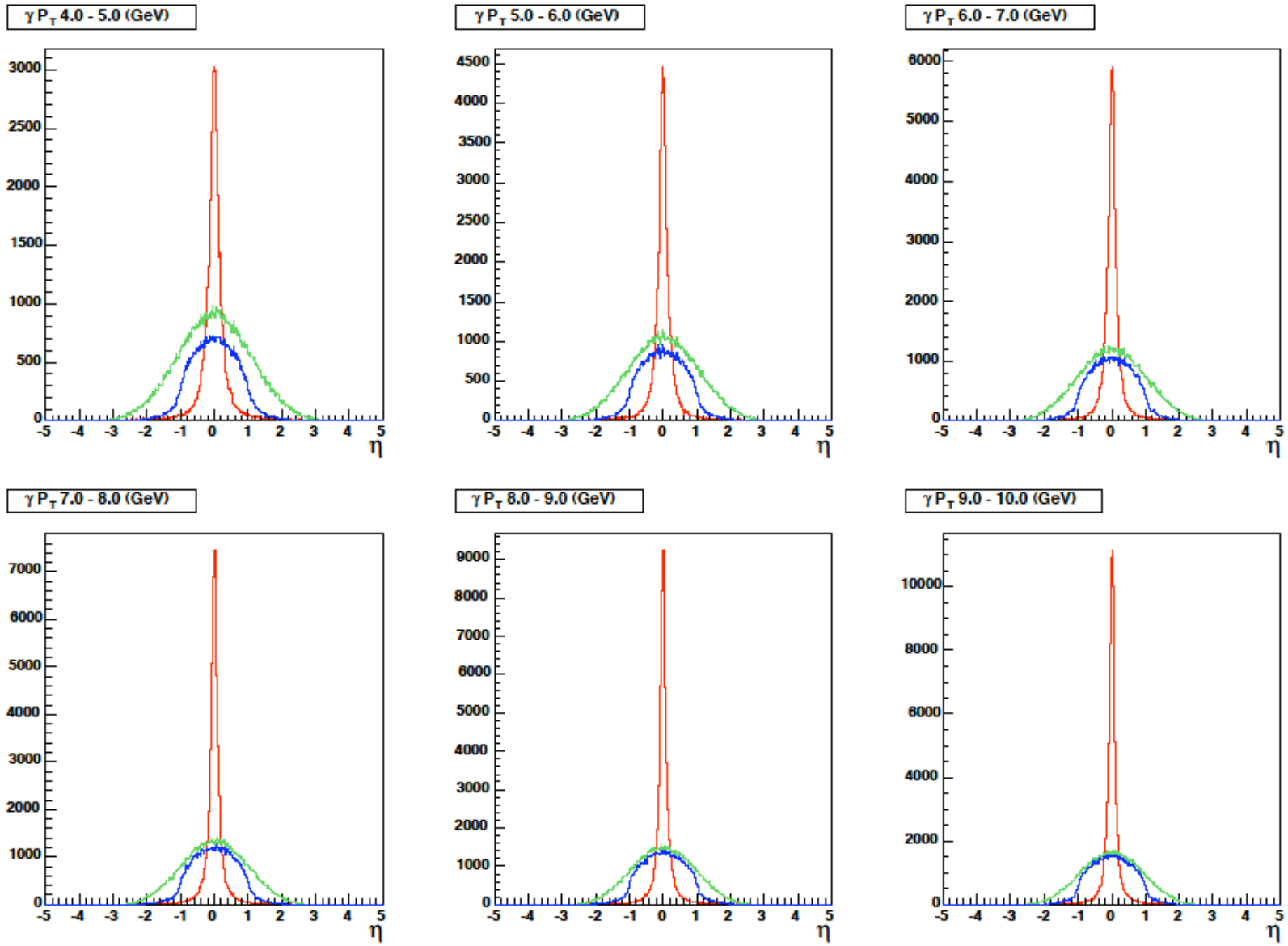
  http://www.phenix.bnl.gov/WWW/publish/togawa/silicon/20030924/

  SiMeetingGjet030924.ppt(pdf)

- I made 4 pictures for this meeting
  - Recoil jet distribution
  - Efficiency and purity
  - x1 and x2 (2-d histo)
  - x1 and x2 (resolution)

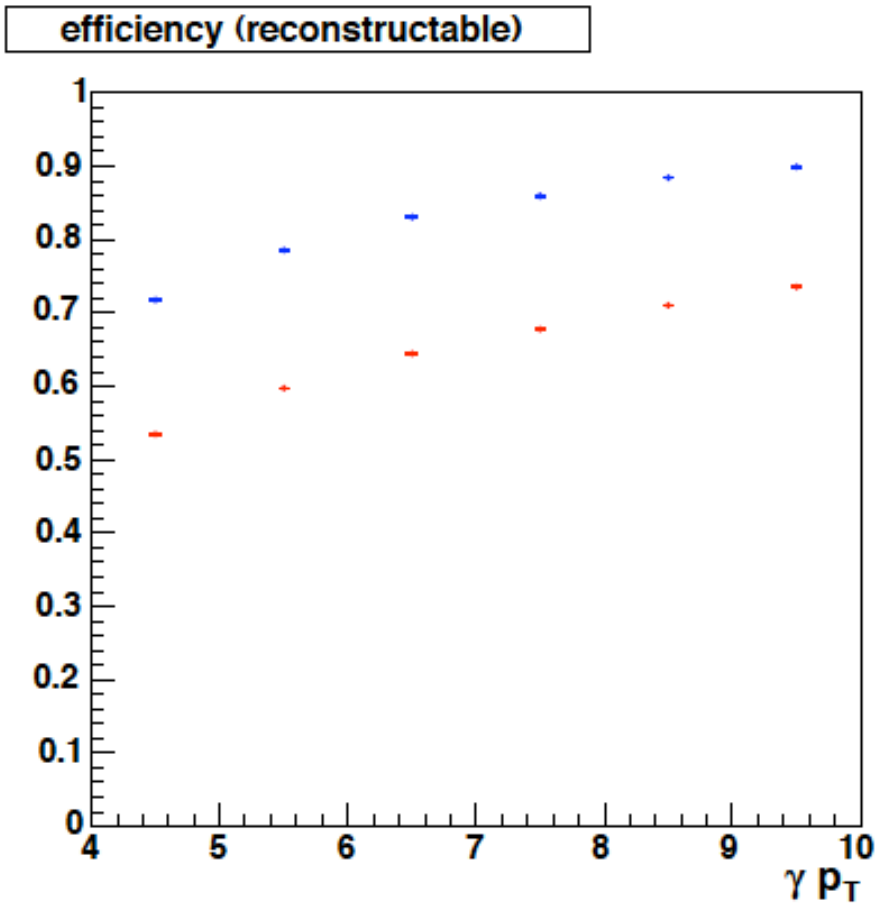
Barrel
recoil jet distribution

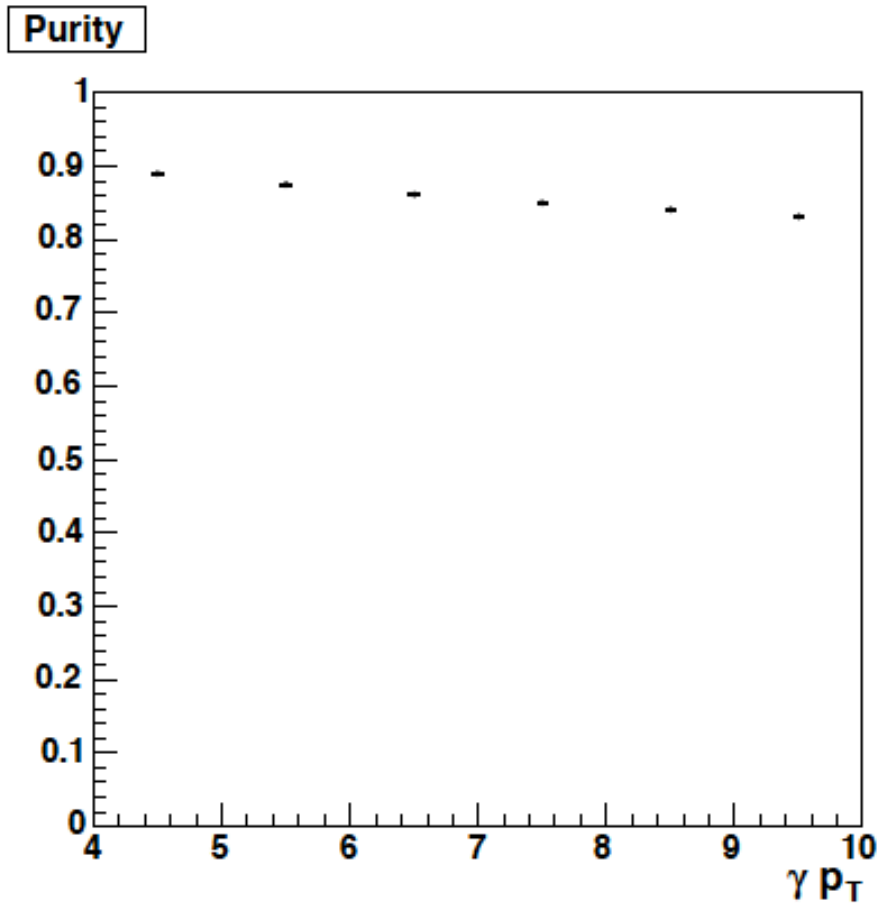
Green : eta(true ; without Vtx)
Blue : eta(true ; with Vtx)
Red : eta(true) - eta(reconstruct)



Barrel efficiency purity

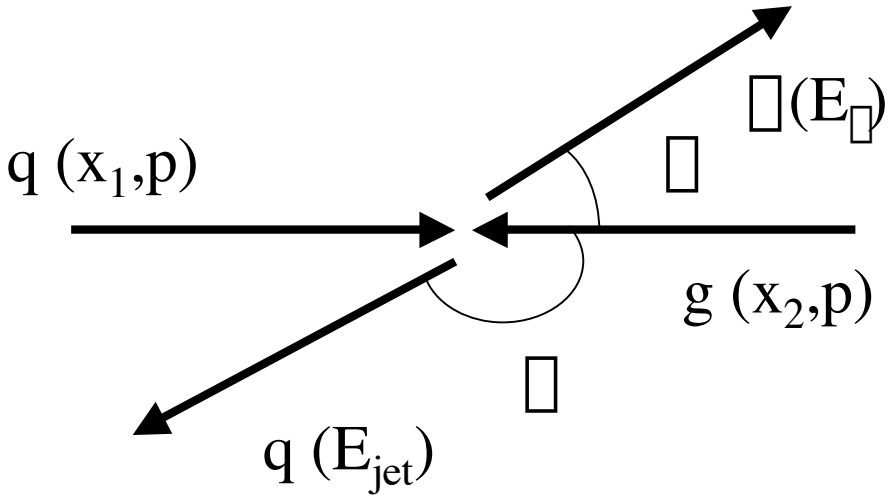
Purity is defined as
(N of q+g->q+gamma) / (N of reconstrable jet)
Mainly (q+g->q+gamma, q+qbar->g+gamma)





Efficiency is defined as
Red : (N of reconstructable jet) / (N of direct gamma)
Blue : (N of eta(true) < 1.0 in a denominator) / (N of reconstructable jet)

kinematics



Ignore quark mass,

$$E_{jet} + E_{\square} = (x_1 + x_2)\sqrt{s}/2$$

$$E_{jet}\cos\square + E_{\square}\cos\square = (x_1 \square x_2)\sqrt{s}/2$$

$$E_{jet}\sin\square = E_{\square}\sin\square = p_T$$

In reconstrable jet axis case,

$$x_1 = \frac{2p_T}{\sqrt{s}}\frac{e^{\square_{jet}} + e^{\square\square}}{2} \qquad x_2 = \frac{2p_T}{\sqrt{s}}\frac{e^{\square\square_{jet}} + e^{\square\square\square}}{2}$$

In know only case,

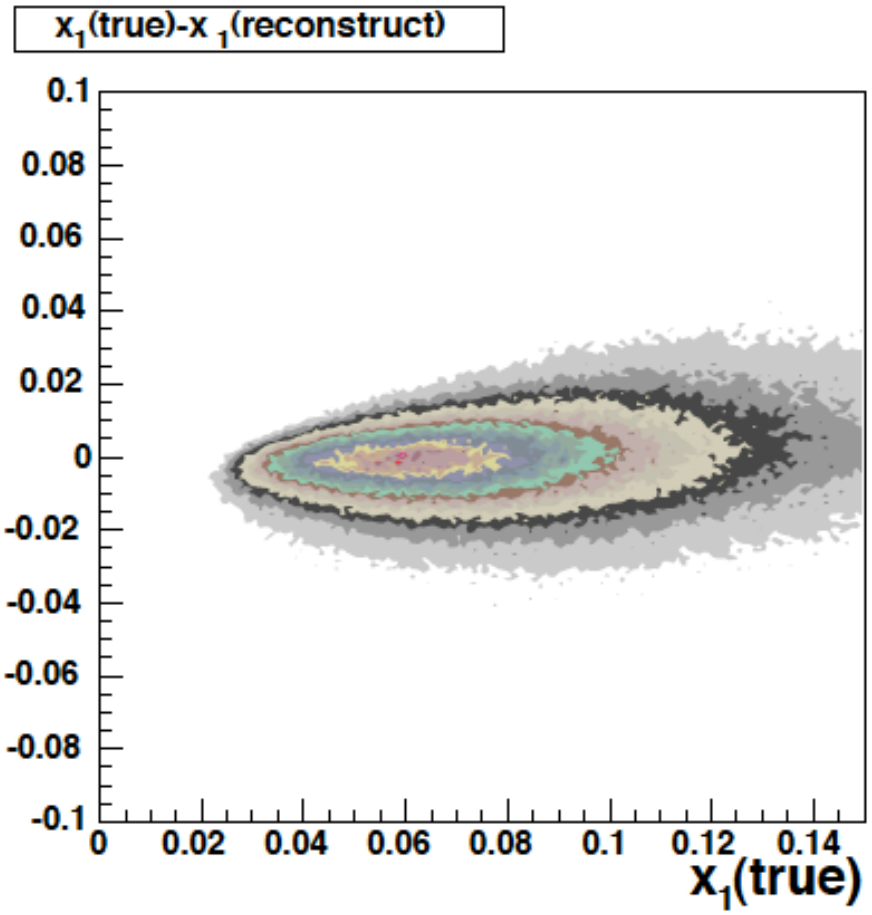
$$\bar{x} = \frac{2p_T}{\sqrt{s}}$$

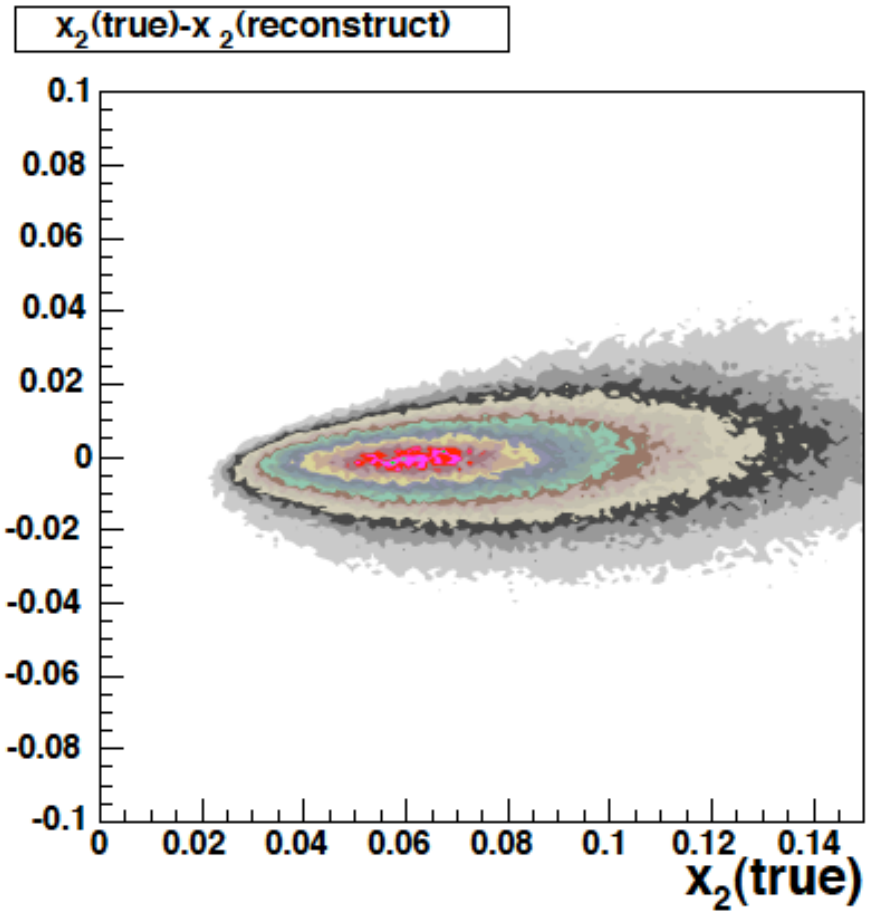
**EMCal resolution

$$\square E = \frac{8.1}{\sqrt{E}} + 2.4(\%)$$

$$\square x = \frac{5.9}{\sqrt{E}} + 1.4(mm)$$

Barrel
Bjorken x_1 x_2





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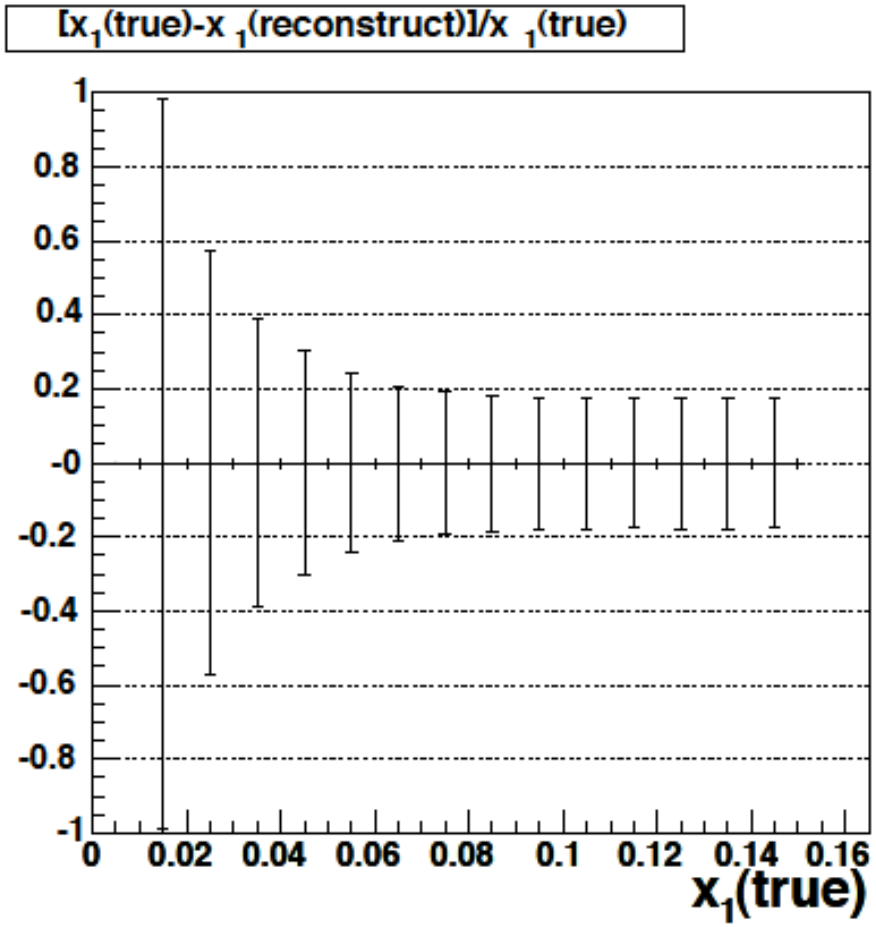
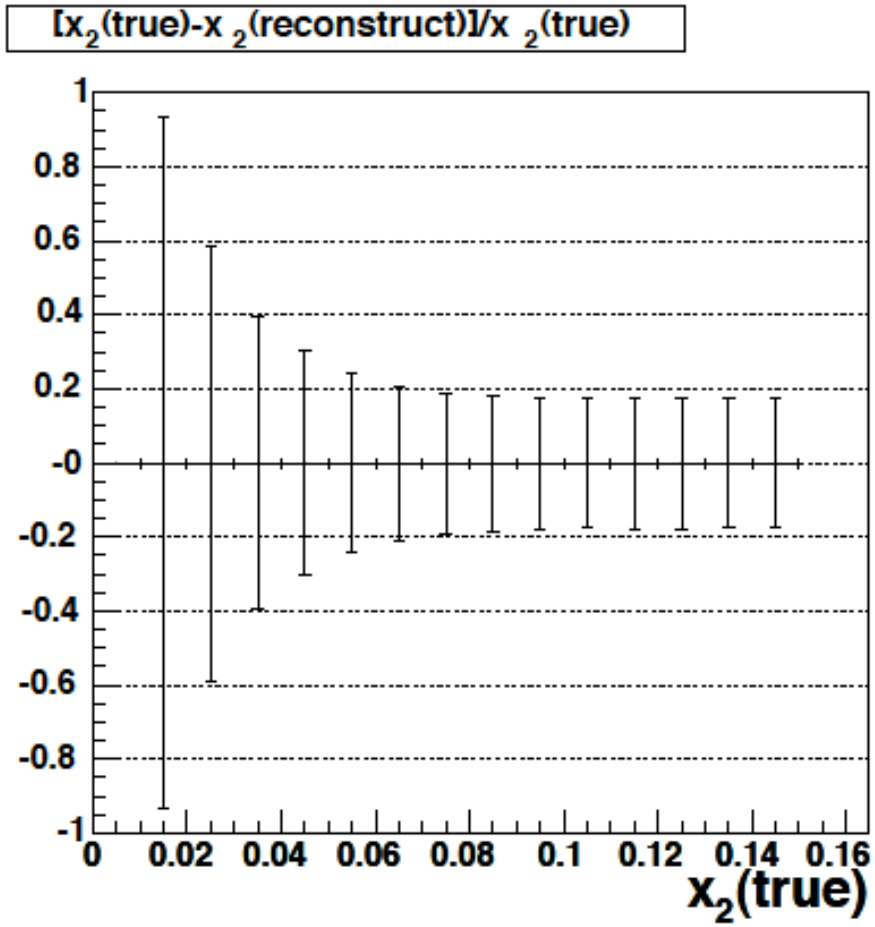
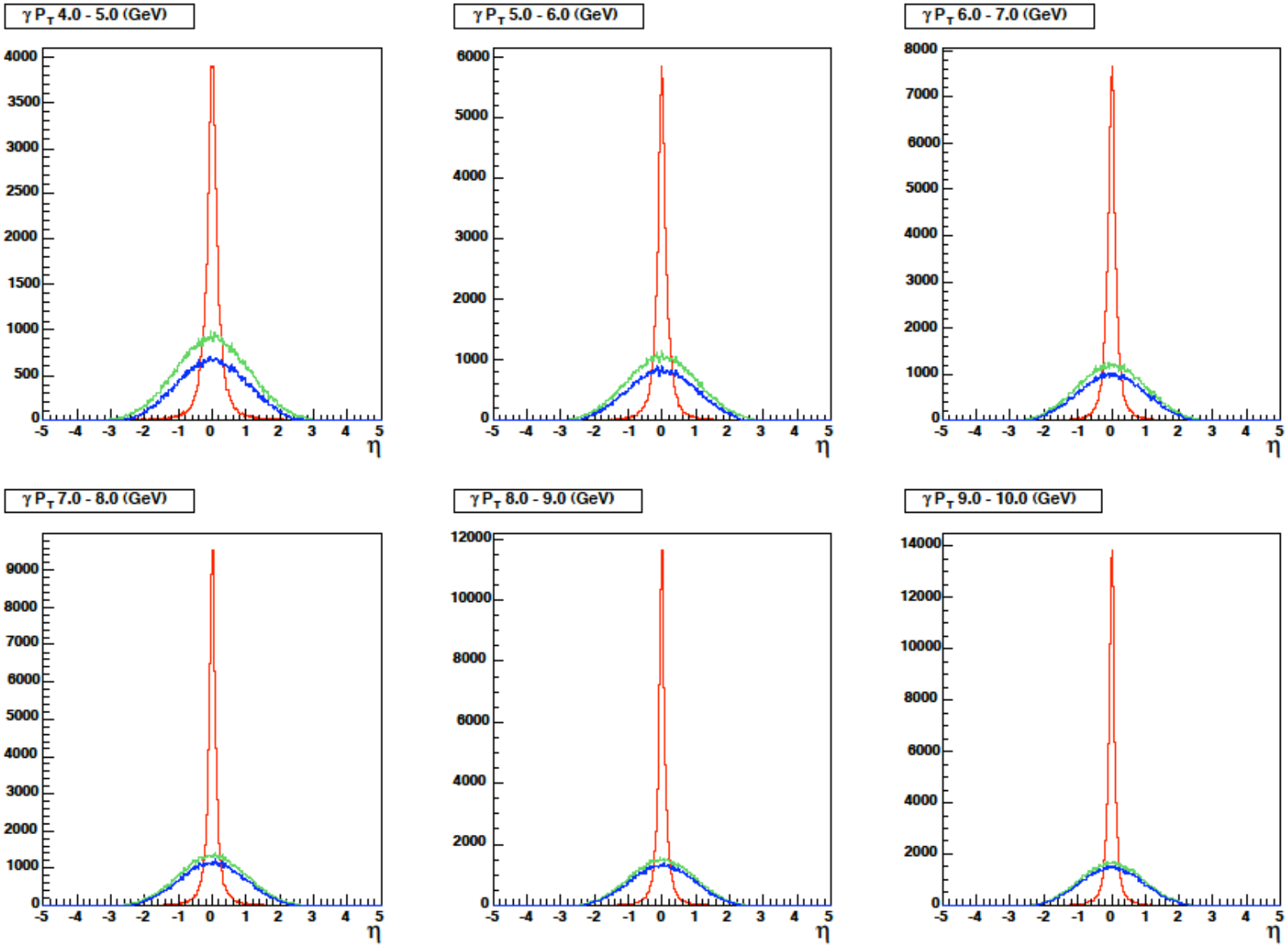




EndCap recoil jet distribution

Green : eta(true ; without Vtx)
Blue : eta(true ; with Vtx)
Red : eta(true) - eta(reconstruct)



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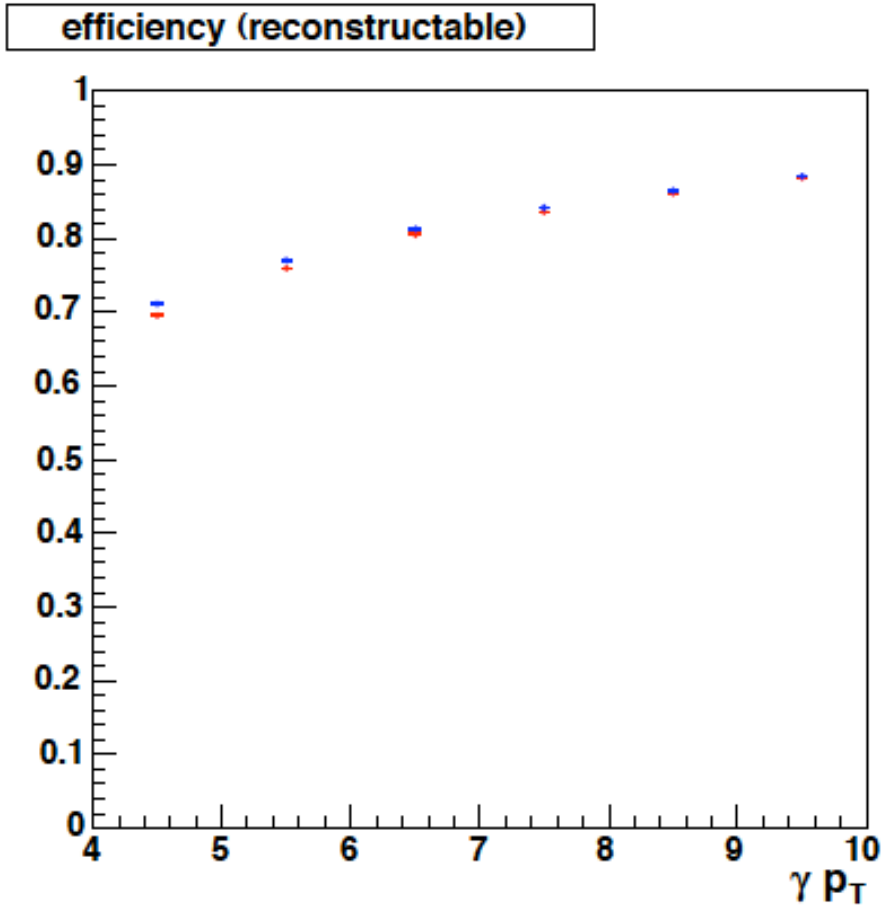

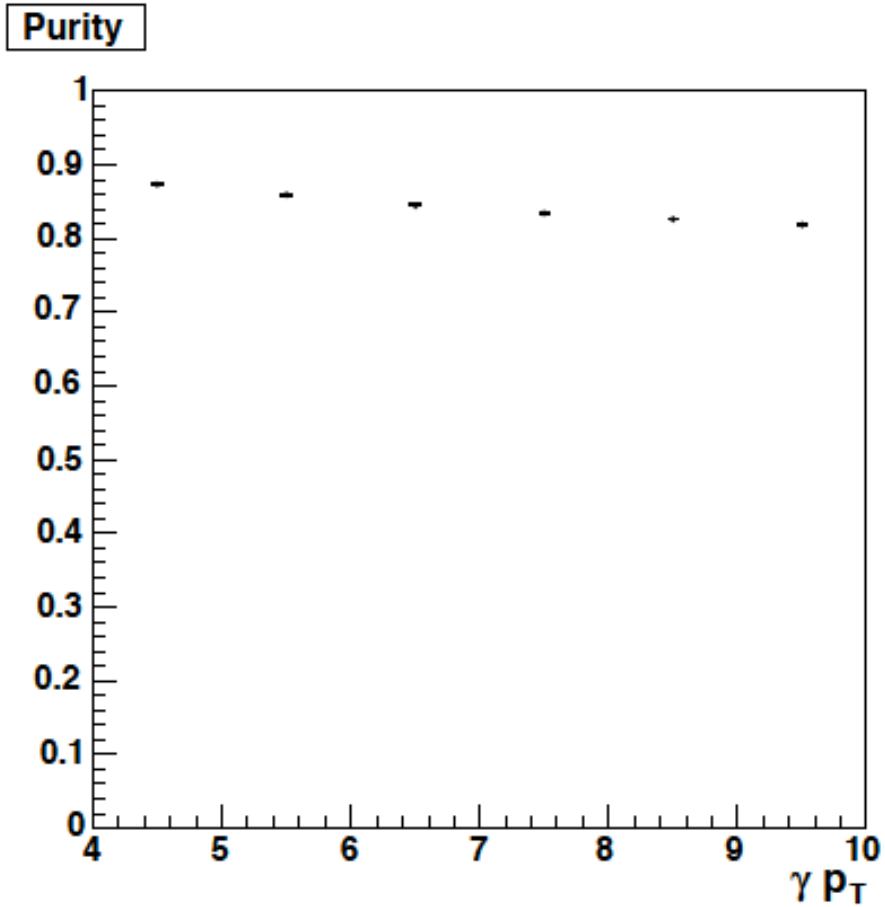

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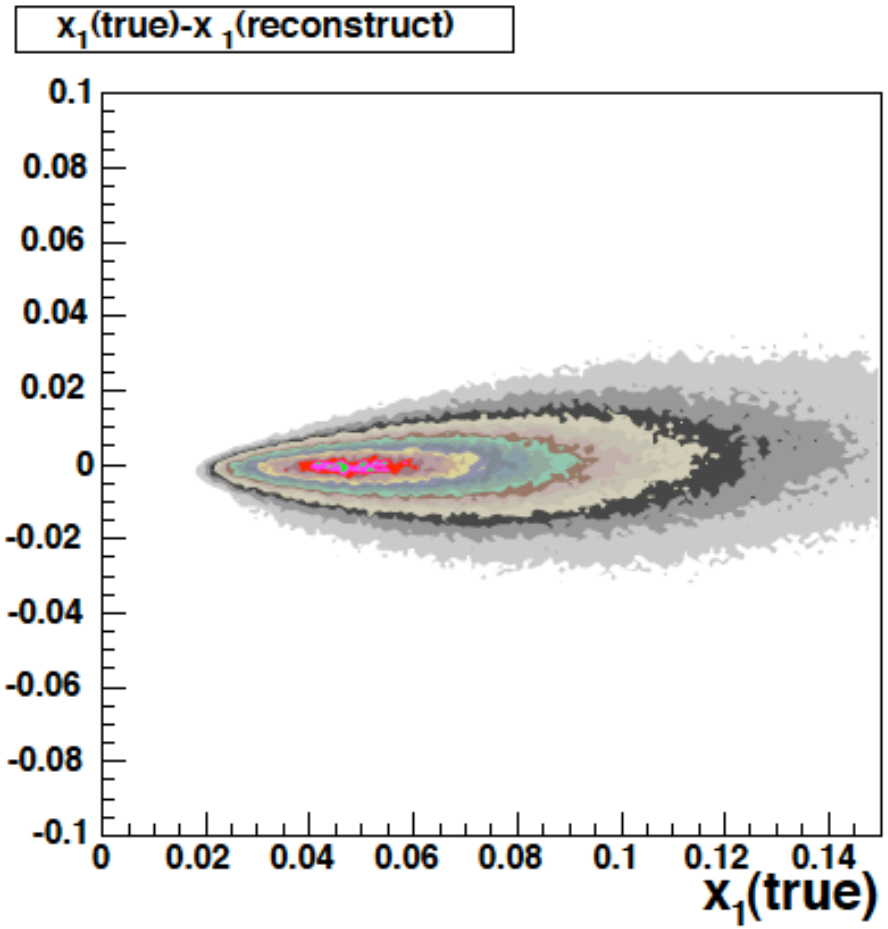
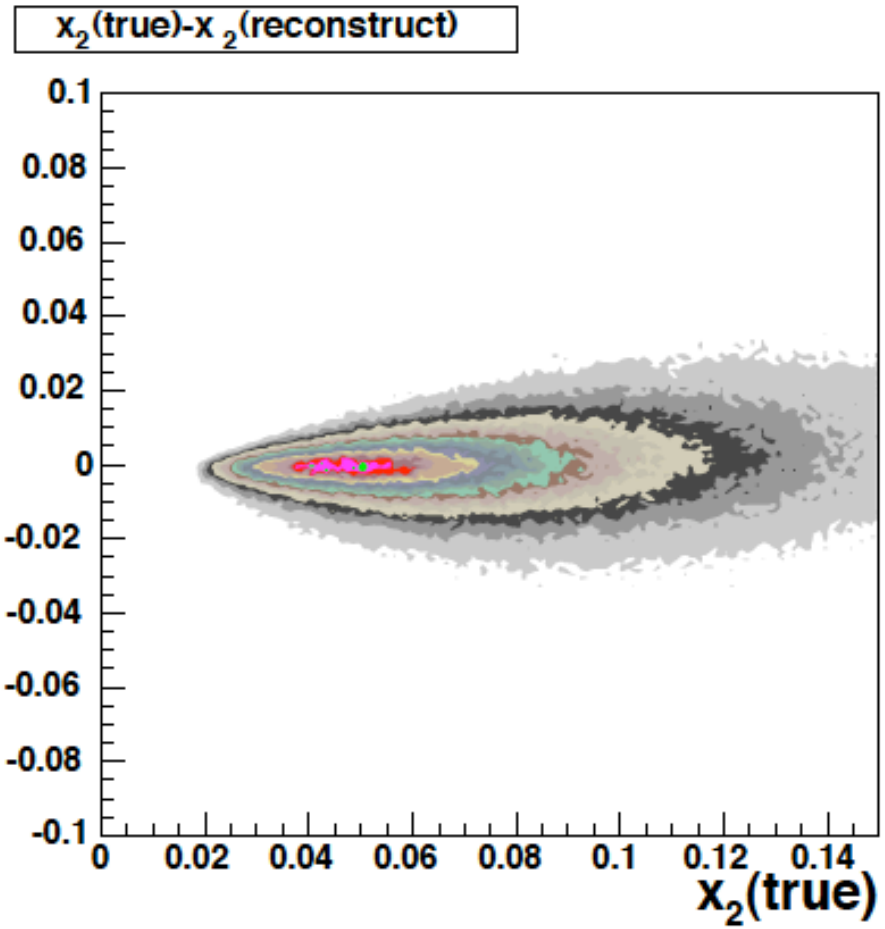
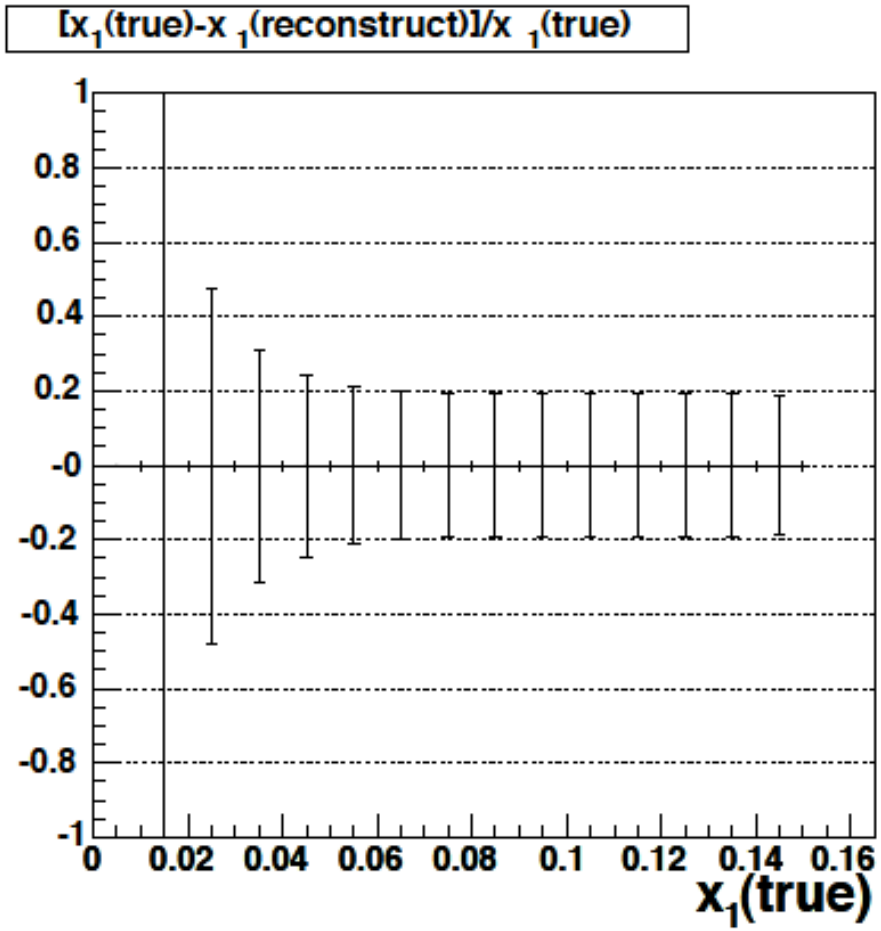
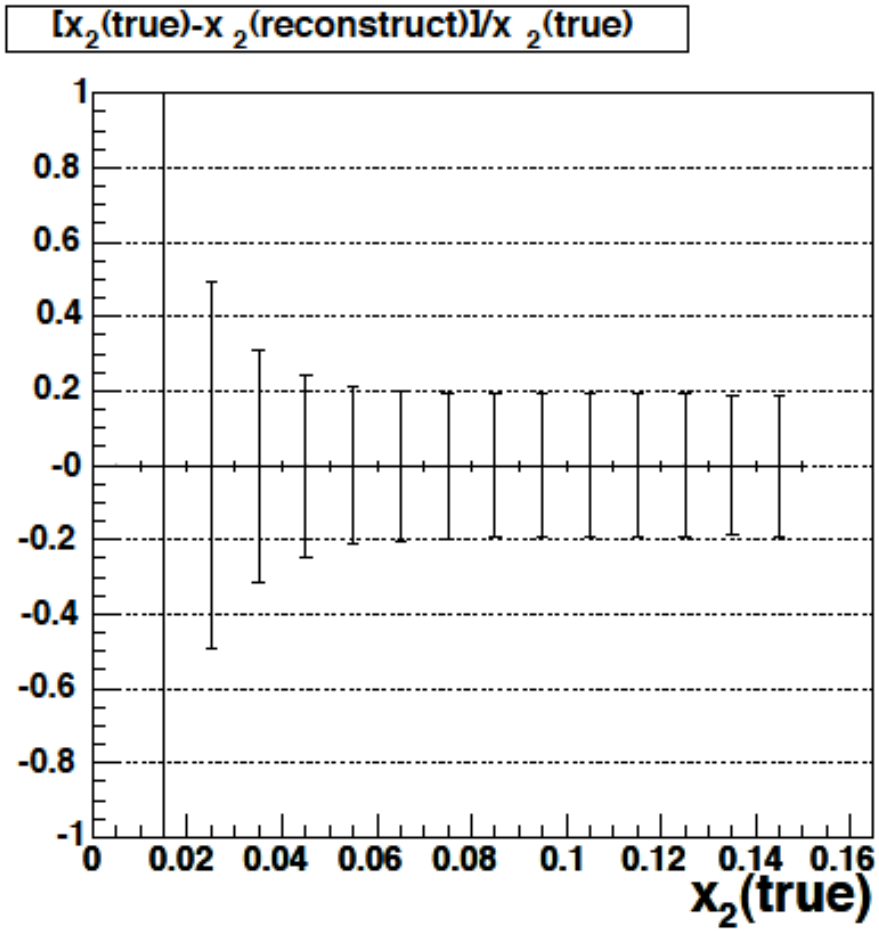
EndCap
Bjorken x_1 x_2





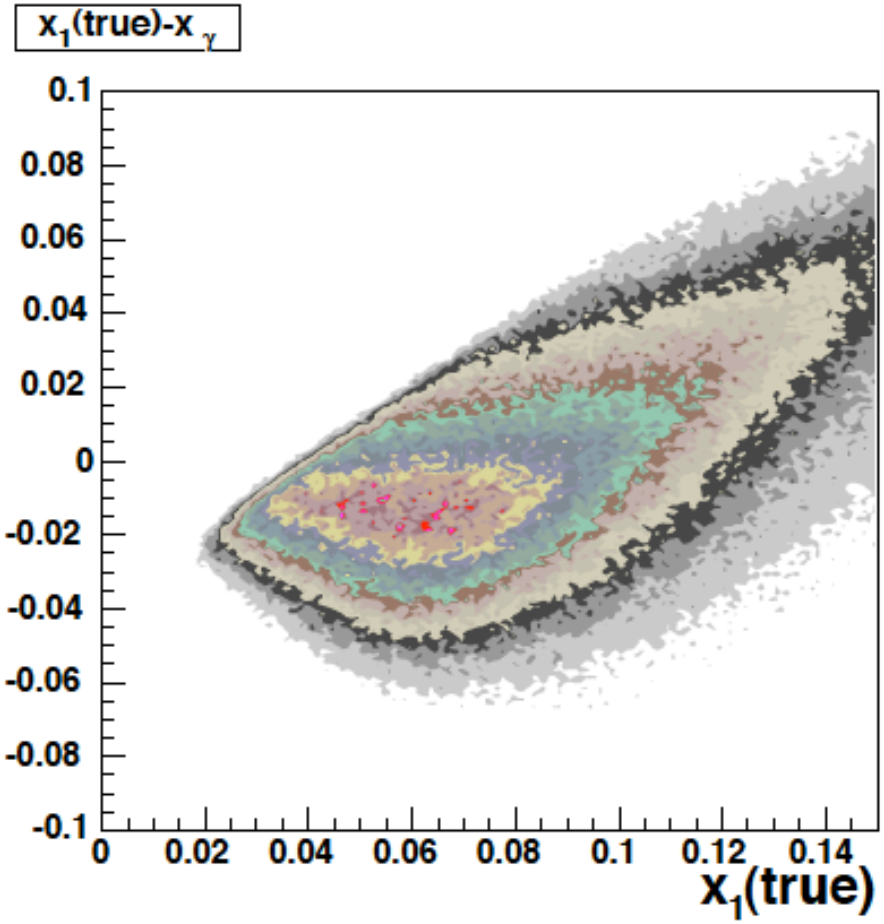
EndCap
Bjorken x_1 x_2

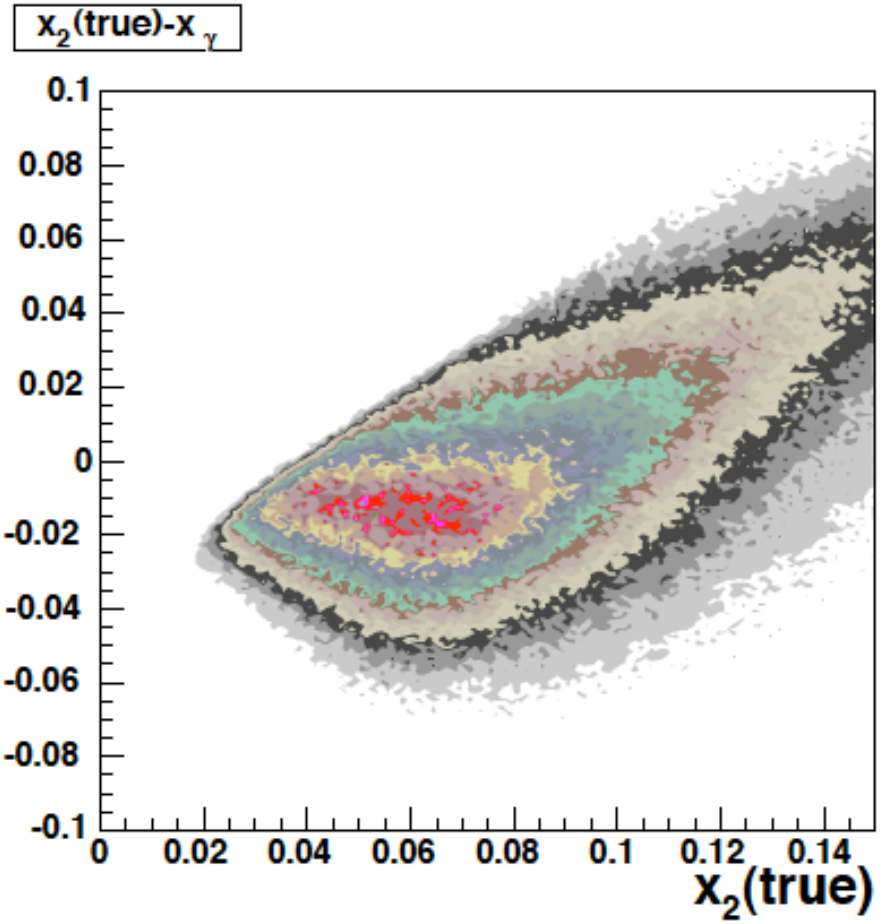


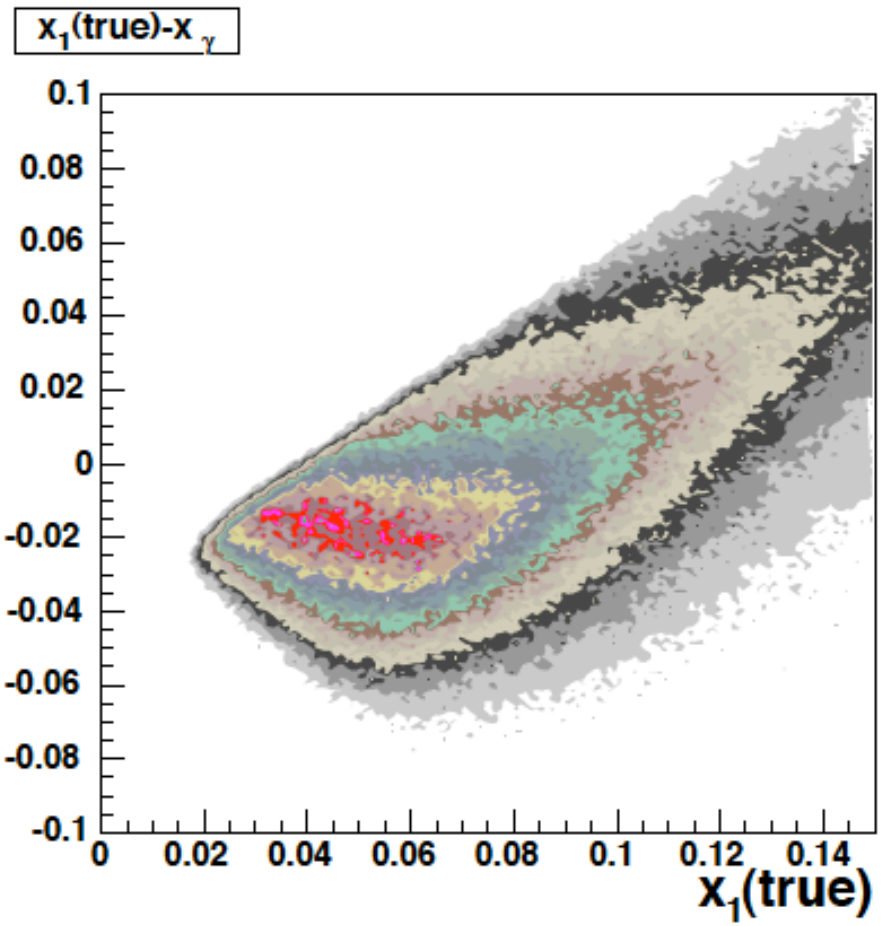
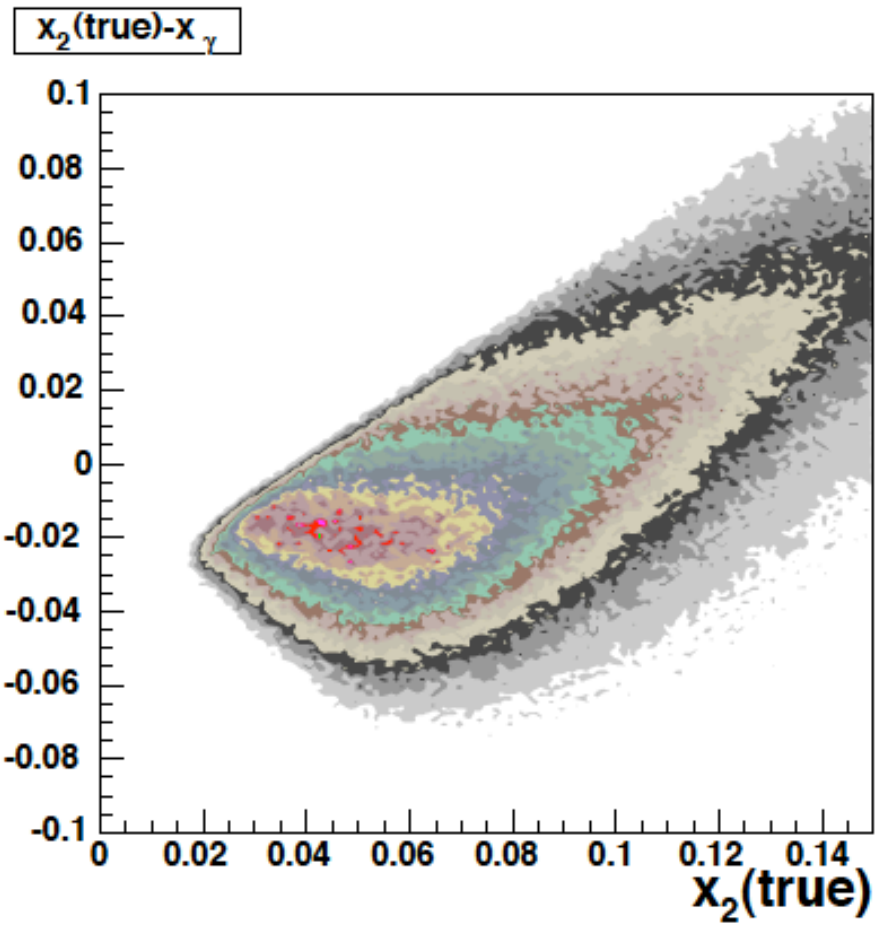


Barrel
Bjorken <x>

Reconstruct just gamma only





EndCap Bjorken <x>

Reconstruct just gamma only