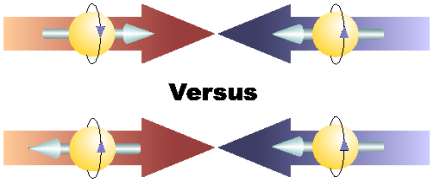
# Forward $\pi^0$ QA

Yaping Wang
(CCNU)



# Data path

Reconstructed $\pi^0$ trees location: **/star/u/ypwang/disk03/pi0Trees3**
Reconstructed jet trees location: **/star/data05/scratch/zchang/Run12Jets_new**
**/star/data05/scratch/zchang/Run12Jets_new_new**

Macros/scripts for production:

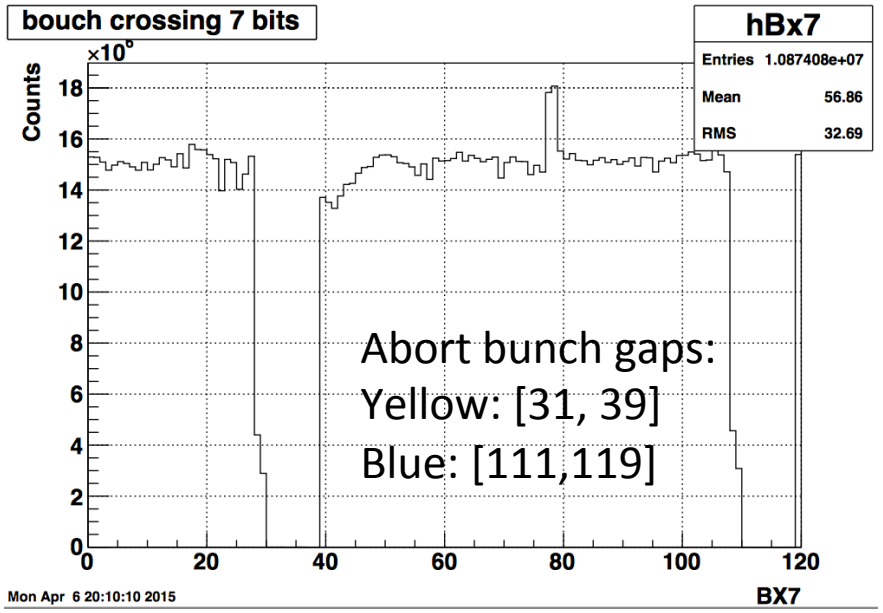
- scripts: **/star/u/ypwang/disk03/pi0Trees3/submitBatch1.sh && submitBatch2and3.sh**
- schedulers: **/star/u/ypwang/disk03/pi0Trees3/scheduler**
- macros: **/star/u/ypwang/disk03/pi0Trees3/macros**

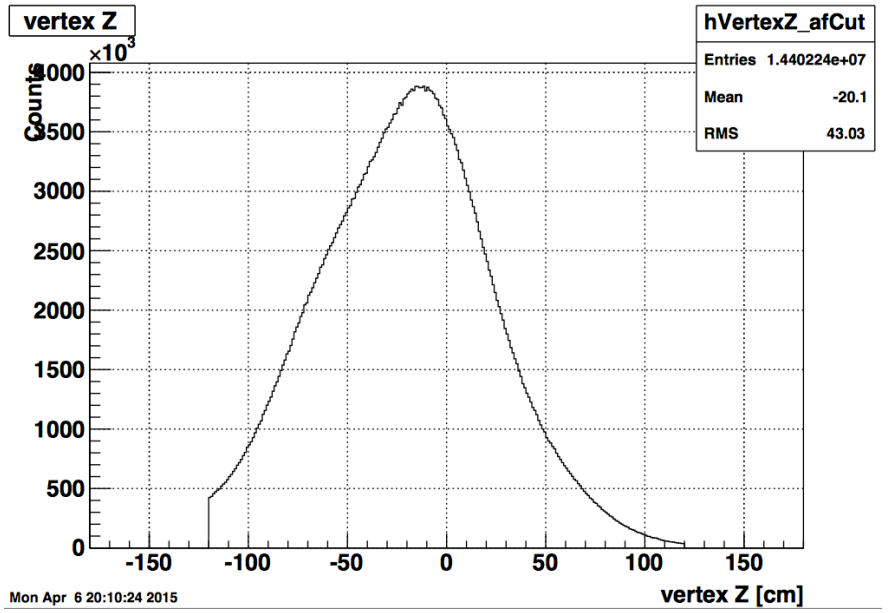
Run number list: **/star/u/ypwang/disk03/pi0Trees3/runNumber_final.list**
Directly obtained from Run12 jet tree production.

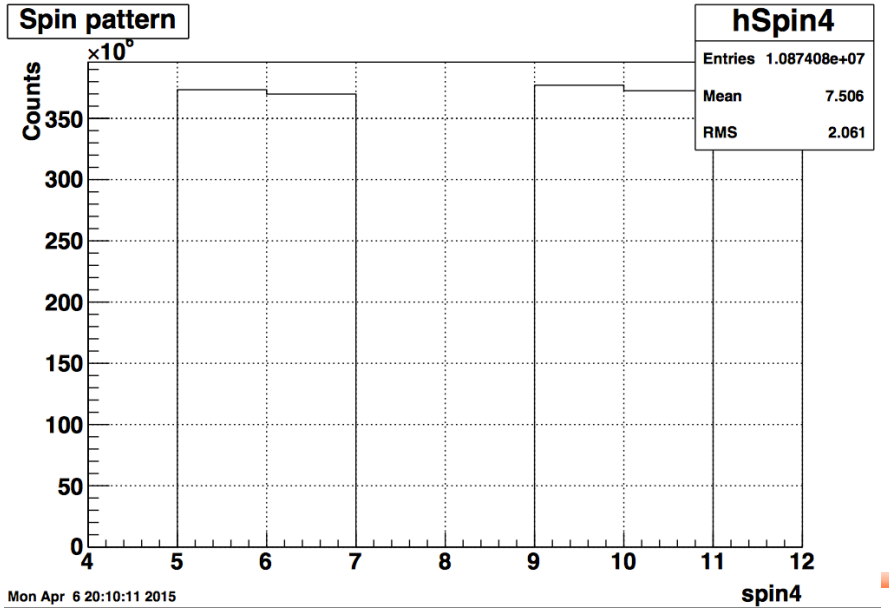
Analysis codes can be found on the path:
http://www.star.bnl.gov/cgi-bin/protected/cvsweb.cgi/offline/users/ypwang/pi0JetAna/

$\pi^0$ QA plots can be found:
http://www4.rcf.bnl.gov/~ypwang/pi0JetAna/pi0QA/woCuts_AlphaD/

# $\pi^0$ QA – event cuts



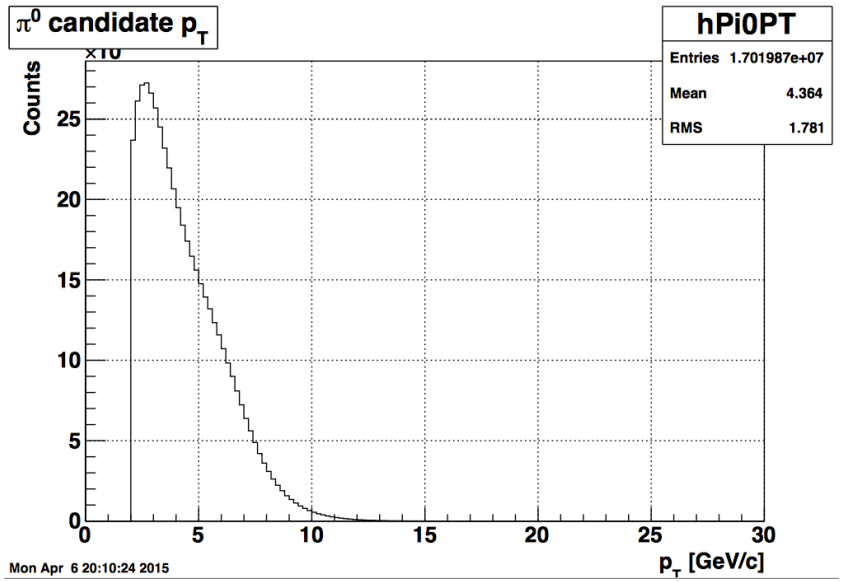



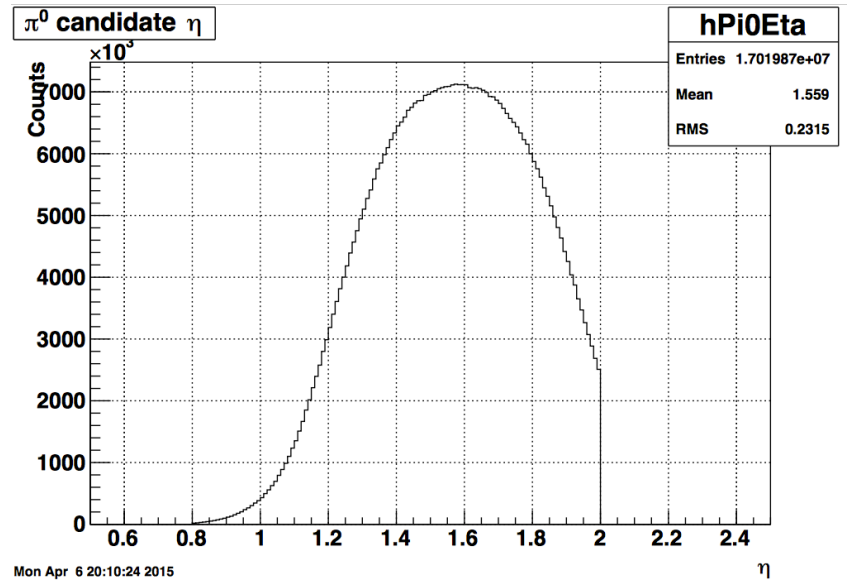



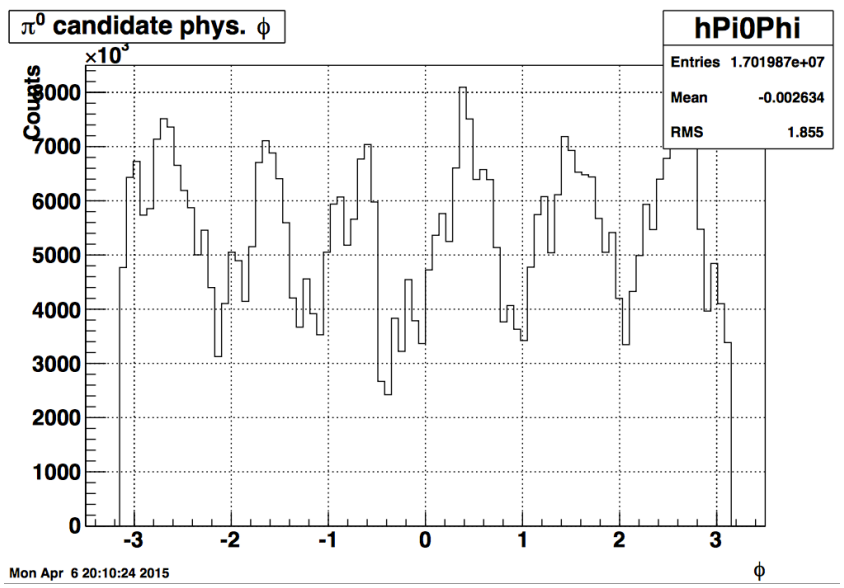

Spin pattern

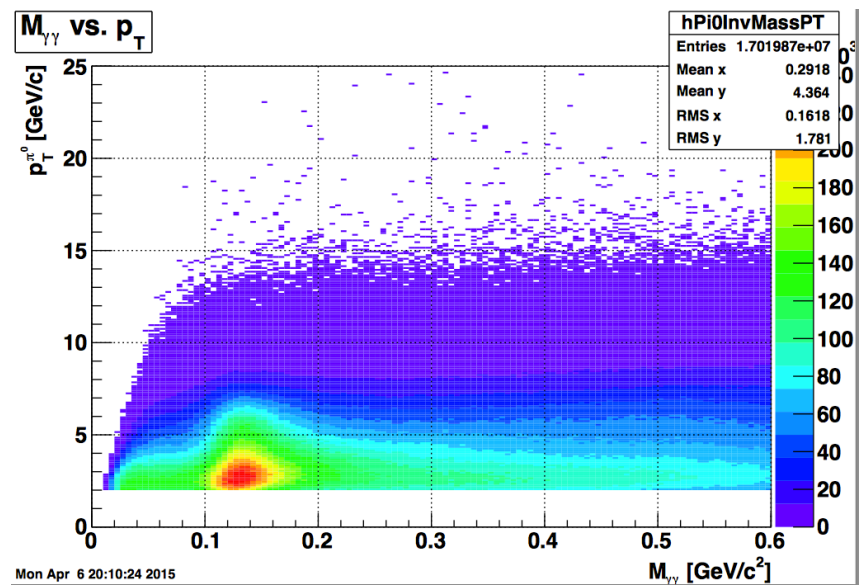
| | Y | B |
|---|---|---|
| 5: | + | + |
| 6: | - | + |
| 9: | + | - |
| 10: | - | - |

# $\pi^0$ QA – pi0 cuts



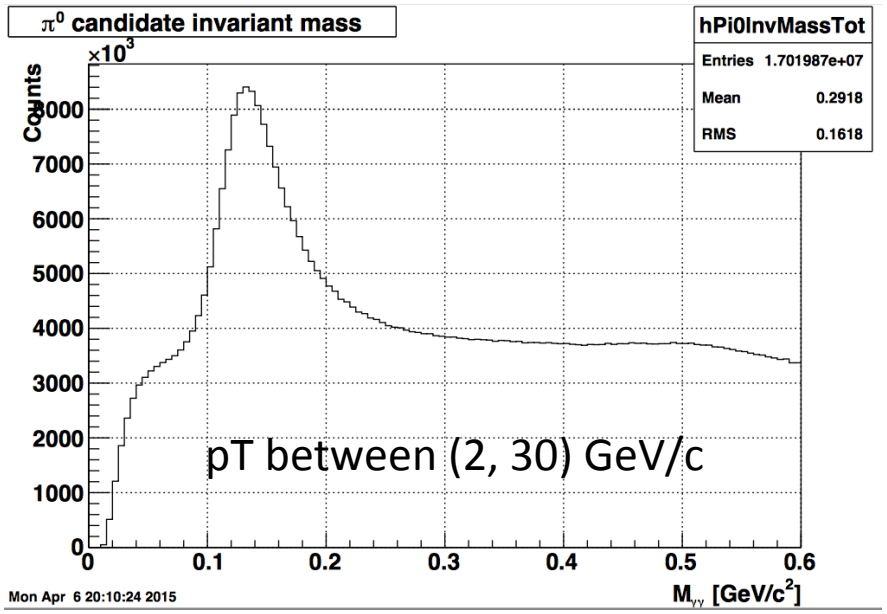



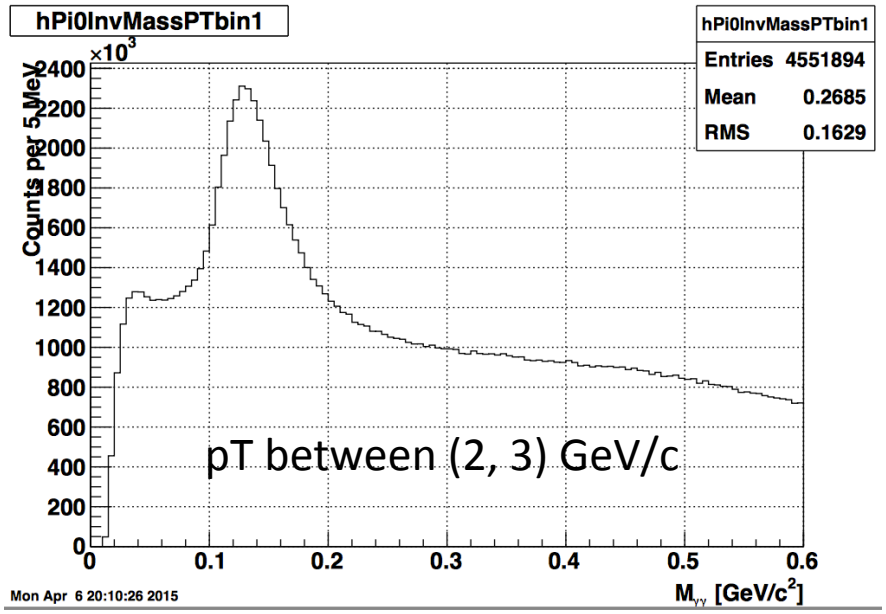



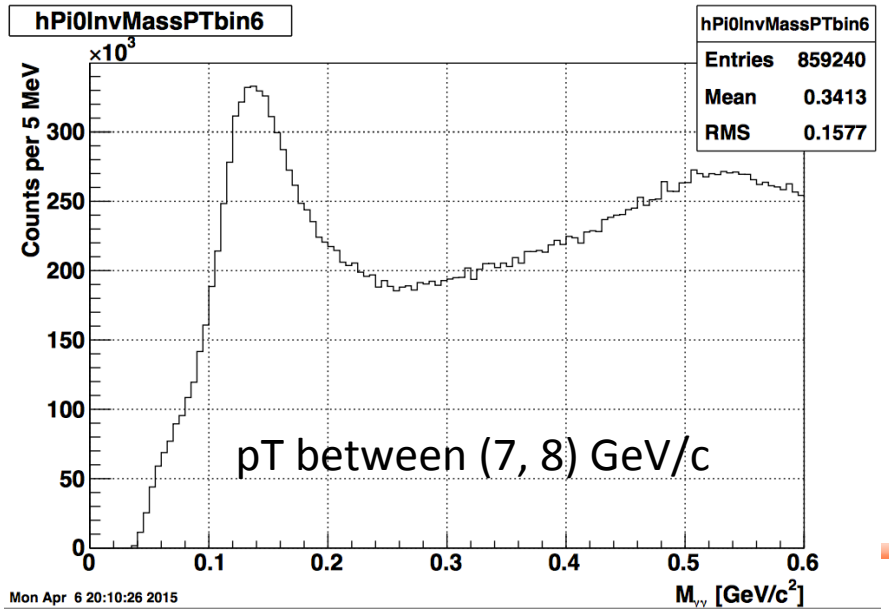
# $\pi^0$ QA – cuts applied

- 7-bit bunch crossing not in 31-39, 111-119 and not 20 or 60.
- Exists a TPC vertex with vertex $z$-position in $\pm 120$.
- Each photon has detector-$\eta$ in $[1.11, 1.96]$ [11].
- Physical-$\eta$ for $\pi^0$ candidates in $[0.8, 2.0]$.
- $E_\gamma > 2.0$ GeV (TSIU), $E_\gamma > 1.5$ GeV (IU).
- Preshower energy of each photon $< 40$ MeV.

# $\pi^0$ QA – pi0 invariant mass




Detailed checks are ongoing:

(1) The background fraction is large (compared to Run6 data). I am testing different cuts or combined ones.

(2) ……