

MTD request of HF PWG disk space

Disk space

Files: PicoDst files

Size: approximate 1 TB

Production information

Year: 2013

Period: day 129 - 161

Species: p+p

Energy: 500 GeV

Trigger: pp500_production_2013

Production: P14ig

Library: SL14g

Data stream: st_mtd

MuDst production

Library: SL15b

Triggers:

- Di-muon: 430103, 430113
- Single-muon: 430101, 430111
- e-mu: 430102, 430112, 430122

Event-level cuts:

- $!(V_x==0 \ \&\& \ V_y==0 \ \&\& \ V_z==0)$
- $|V_z| < 2000 \text{cm}$
- $\text{sqrt}(V_x*V_x + V_y*V_y) < 10 \text{cm}$
- $\text{RefMult} \geq 0$

Track-level cuts:

- all global tracks
- $0 \leq \text{flag} \leq 1000$

- $p_T (\text{global}) > 0.1 \text{ GeV}/c$
- $n\text{HitsFit}(k\text{TpcId}) \geq 15$
- $n\text{HitsFit}(k\text{TpcId})/n\text{HitsPoss}(k\text{TpcId}) > 0.52$
- $g\text{DCA} < 10 \text{ cm}$

Physics analysis related to this production

This is the first data set that has all three MTD related triggers fully functioning and with more than half of the MTD trays installed. Therefore, it is crucial for understanding the performance of MTD in terms of triggering capability, detector alignment, calibration procedure as well as muon identification. The most interesting and promising measurement out of this data set is to measure the cross section of j/ψ at relatively low p_T , i.e. $p_T < 4 \text{ GeV}/c$. It will be the first measurement of j/ψ signals using di-muon channel in STAR. It complements a similar measurement at higher p_T via di-electron channel. Furthermore, di-muon or e-muon continuum will also be explored. The experience gained in analyzing this data set will benefit greatly the further analysis on the more complicated system, such as $p+\text{Au}$ and $\text{Au}+\text{Au}$.

File description

The PicoDst structure is developed based on the LBNL PicoDst format by adding the MTD related information. Here is a list of branches in the PicoDst tree:

Branch name	Usage
StPicoEvent	Global characteristic of the event, e.g. nprimary vertex, reference multiplicity, event plane, etc.
StPicoEmcTrigger	Trigger information for HT triggers.
StPicoMtdTrigger	Trigger information for MTD triggers.
StPicoTrack	Global tracks satisfying a minimal set of quality cuts. If present, momentum of the corresponding primary track is also stored.
StPicoBTofPidTraits	PID information from TOF.
StPicoEmcPidTraits	PID information from EMC.
StPicoMtdPidTraits	PID information from MTD.
StPicoBTOWHit	EMC tower hits, which can be used for clusterization.
StPicoMtdHit	MTD hits with timing information.

For more details about what variables are stored in the each branch, please refer to:

<http://www.star.bnl.gov/protected/lfspectra/marr/documents/PicoDst.pdf>