Centrality wagon usage

How to use centrality wagon?

1) Go to mpdroot/physics/pairKK/macro directory

2) Create a macro (example is below)

3) Tune parameters in input file pCentr.txt (next slide)

4) root -l TryMpdAnalyser.C

mpdloadlibs.C should be modified:

1) comment libHADGEN, libTHadgen and libEtof

2) add full path to basiclibs.C macro, e.g.

#include "/scratch2/mudrokh/ROOT/dev_Wagons/mpdroot/gconfig/basiclibs.C"

```
void TryMpdAnalyser() {
    gROOT->LoadMacro("mpdloadlibs.C");
    gROOT->ProcessLine("mpdloadlibs()");

    MpdAnalysisManager man("ManagerAnal");
    man.InputFileList("/lhep/users/mudrokh/SRC/MiniDst/lists/50M_UrQMD_req25/DST/Dst-1000.txt");
    man.ReadBranches("*");
    man.SetOutput("histos.root");   (Obsolete)

    MpdCentralityAll pCentr("pCentr","pCentr");
    man.AddTask(&pCentr);

    man.Process();
}
```

List of Dst files
MiniDst format is not supported

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**Input file pCentr.txt**

```
#-------Parameters used for analysis------
# Event selection:
mZvtxCut 130 //  cut on vertex z coordinate

# Track selection:
mNofHitsCut   10  // minimal number of hits to accept track
mEtaCut       0.5  // maximal pseudorapidity accepted
mPtminCut     0.1  // minimal pt used in analysis
mDcaCut       2.0  // maximal pseudorapidity accepted

# Production selection:
mProdGenerator Req25-UrQMD  // Production-Generator
mInFileConvert nTr_Centr_Req25-UrQMD.root  // input file with track-to-centrality converter

//mProdGenerator Req26-DCM-QGSM-SMM  // Production-Generator
//mInFileConvert nTr_Centr_Req26-DCM-QGSM-SMM.root  // input file with track-to-centrality converter

//mProdGenerator Req30-PHSD  // Production-Generator
//mInFileConvert nTr_Centr_Req30-PHSD.root  // input file with track-to-centrality converter

# Track efficiecny corrections:
mInFileTrEff TrackRecEff.root  // input file with track reconstruction efficiecnies
```

Lines with production (generator) of interest should be uncomment
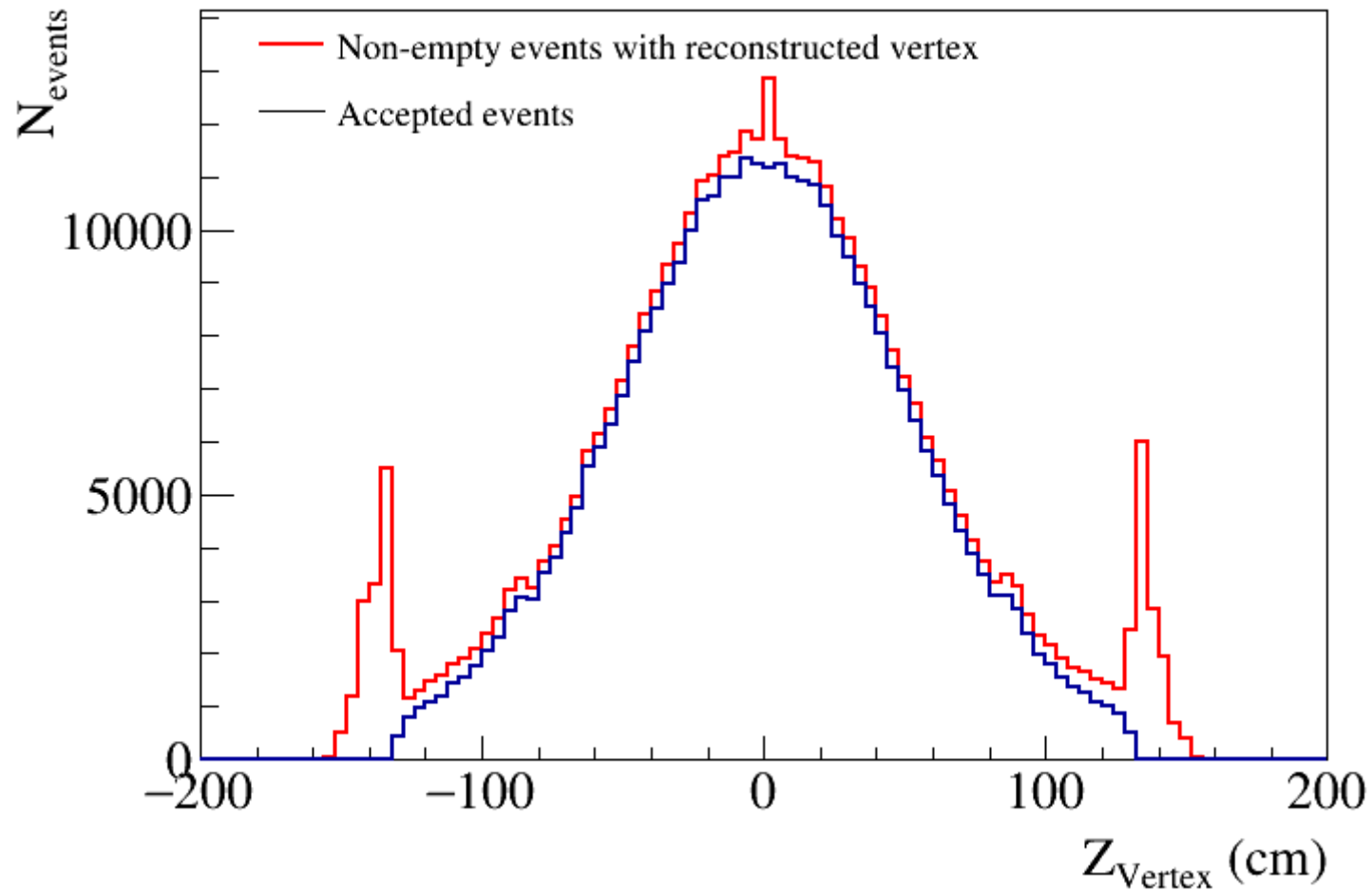
Files **nTr_Centr_Req25-UrQMD.root** (Centrality bin VS nTracks) and **TrackRecEff.root** (track efficiency VS Z_{vertex} and η) already exist within directory and can be used in external macros.

Output of centrality wagon: number of events after different selections
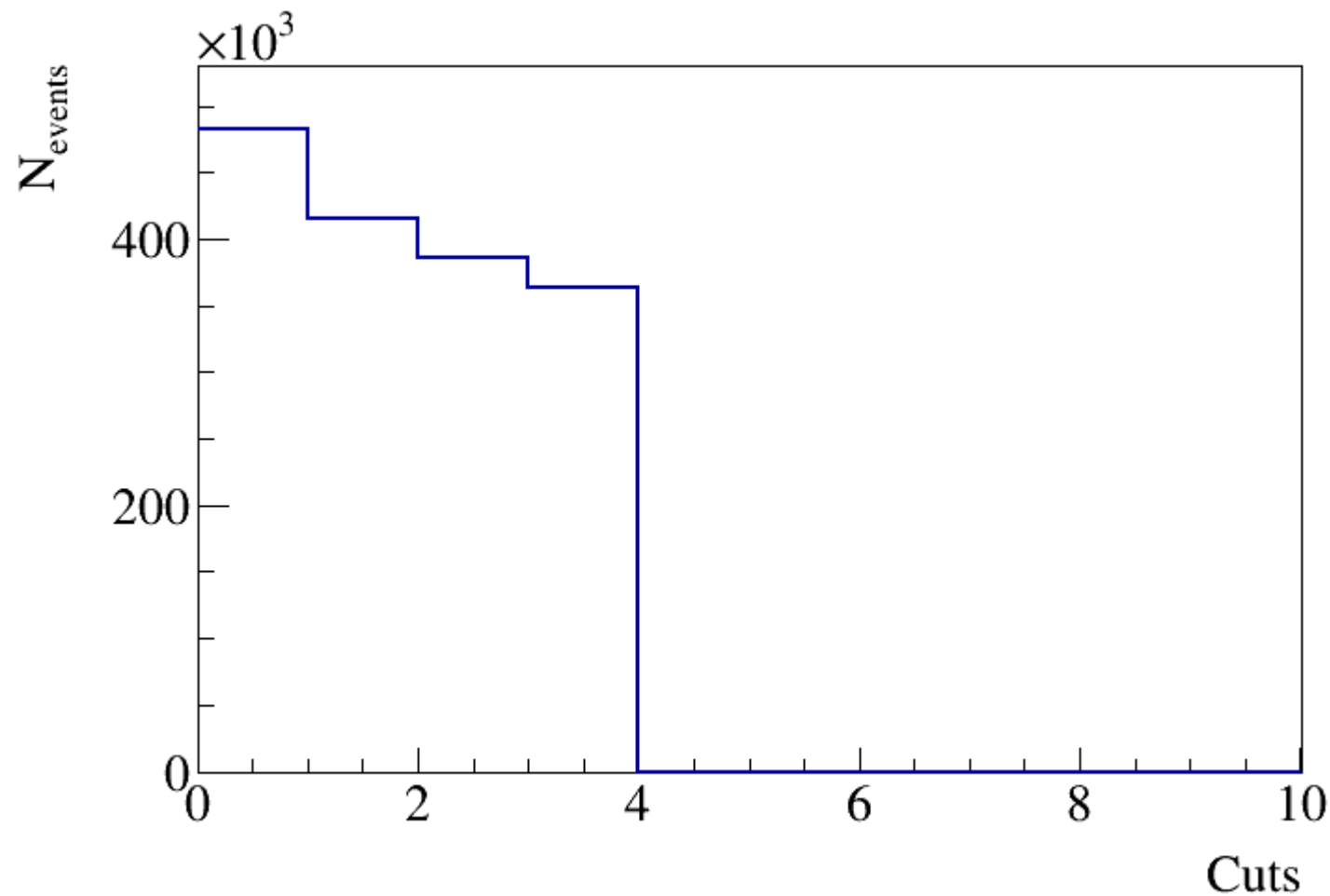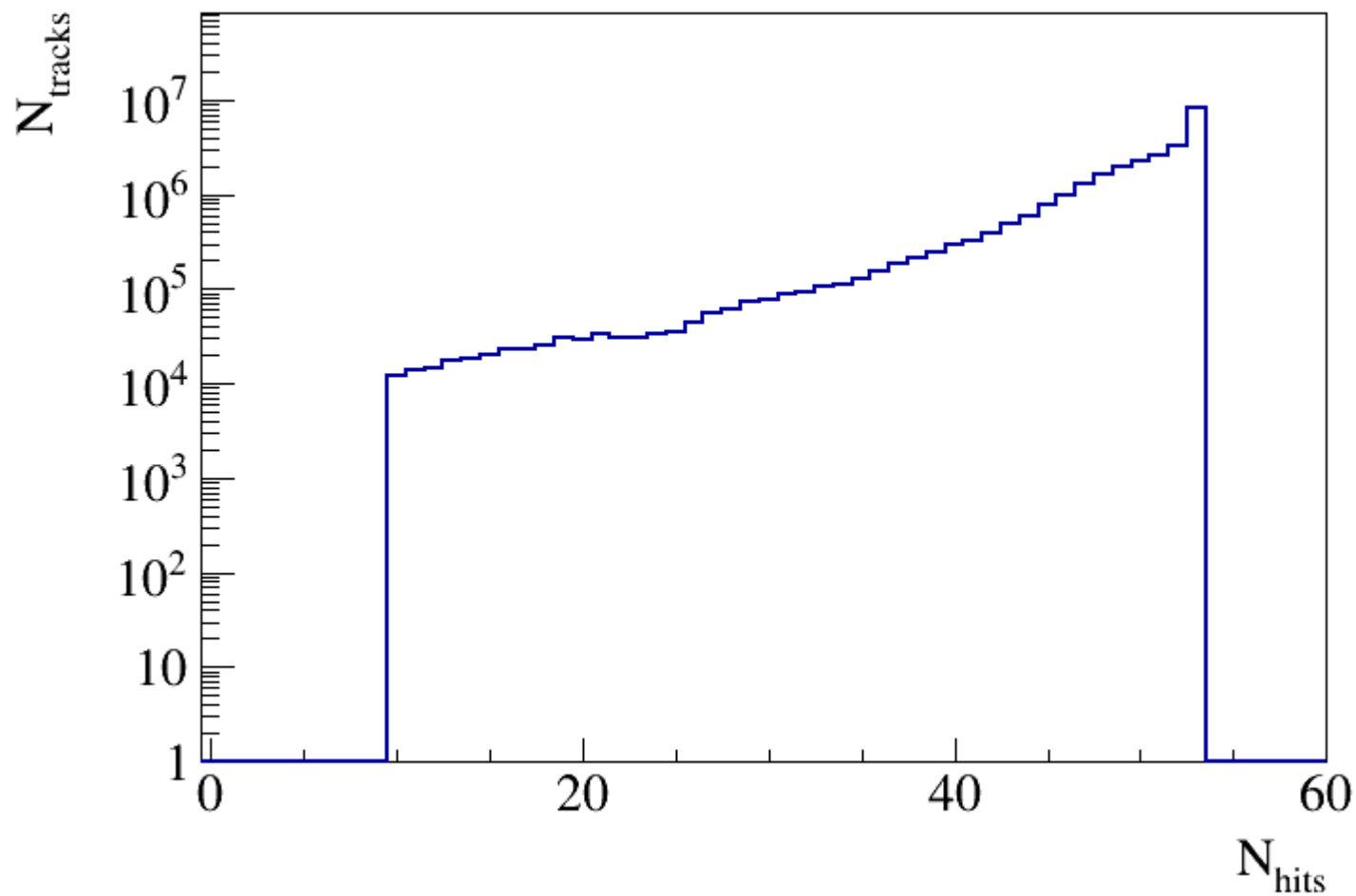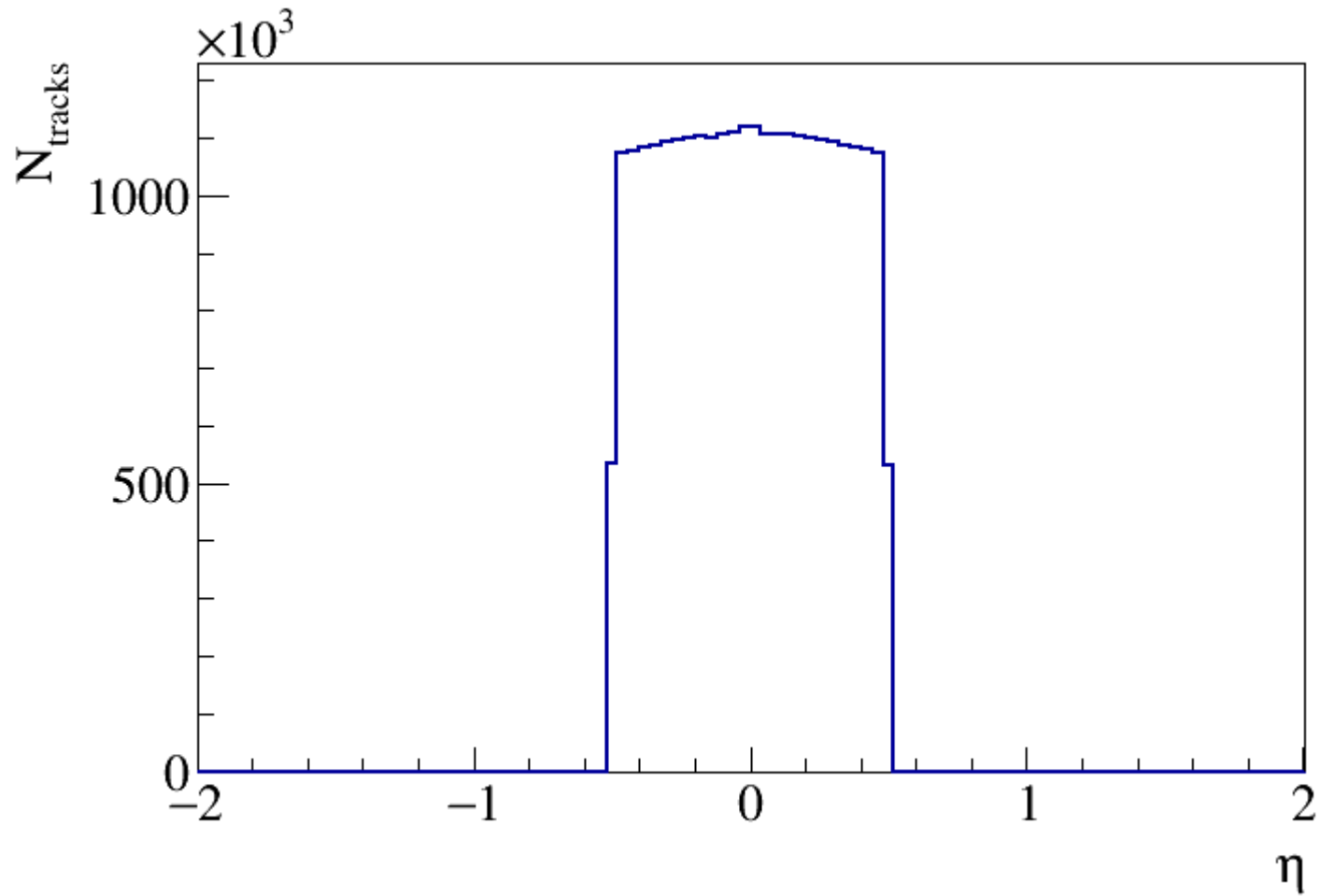
~480k events have been used
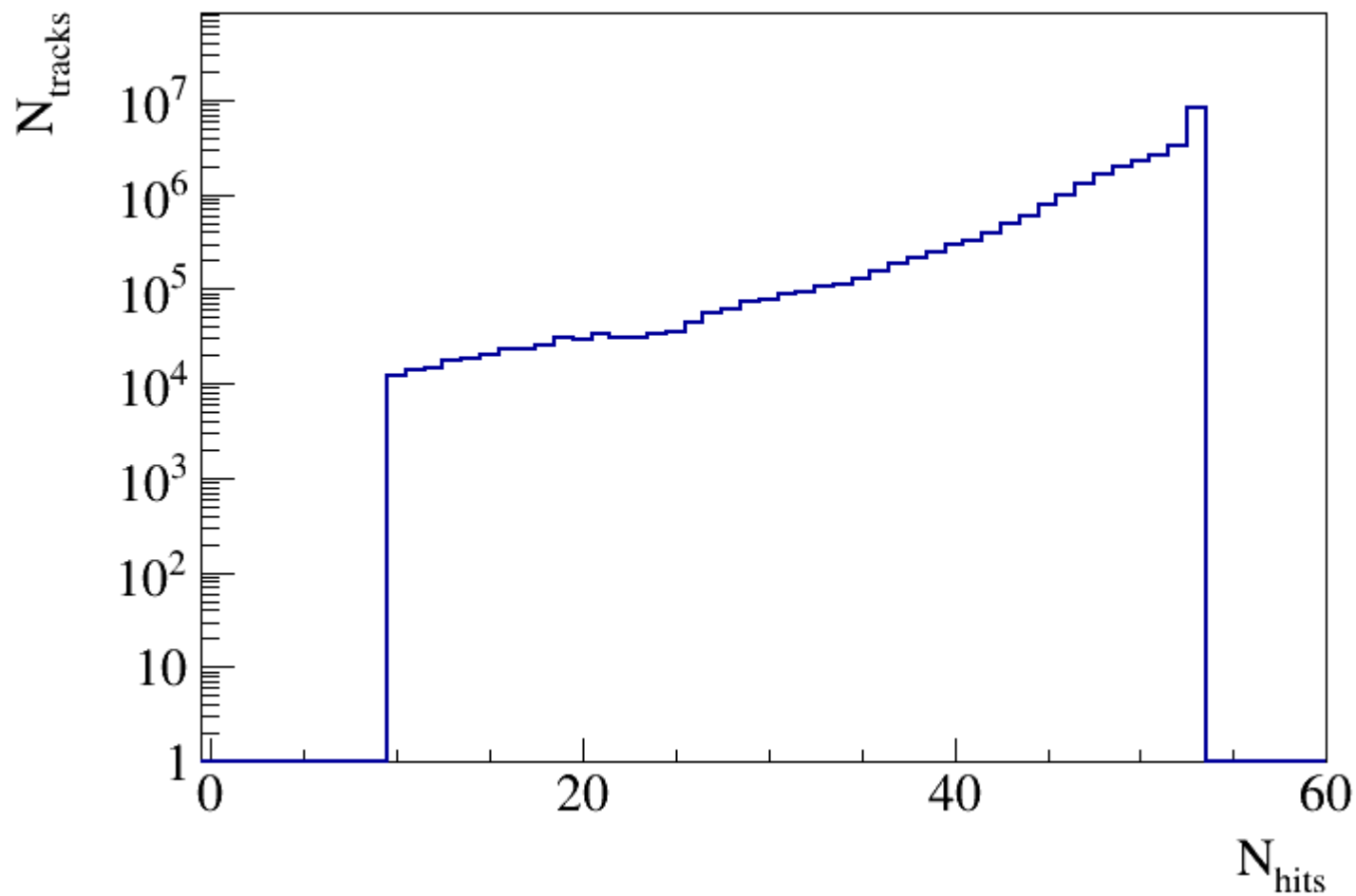
Output of centrality wagon: event Z-vertex distribution

Output of centrality wagon: N_{hits} distribution of accepted tracks
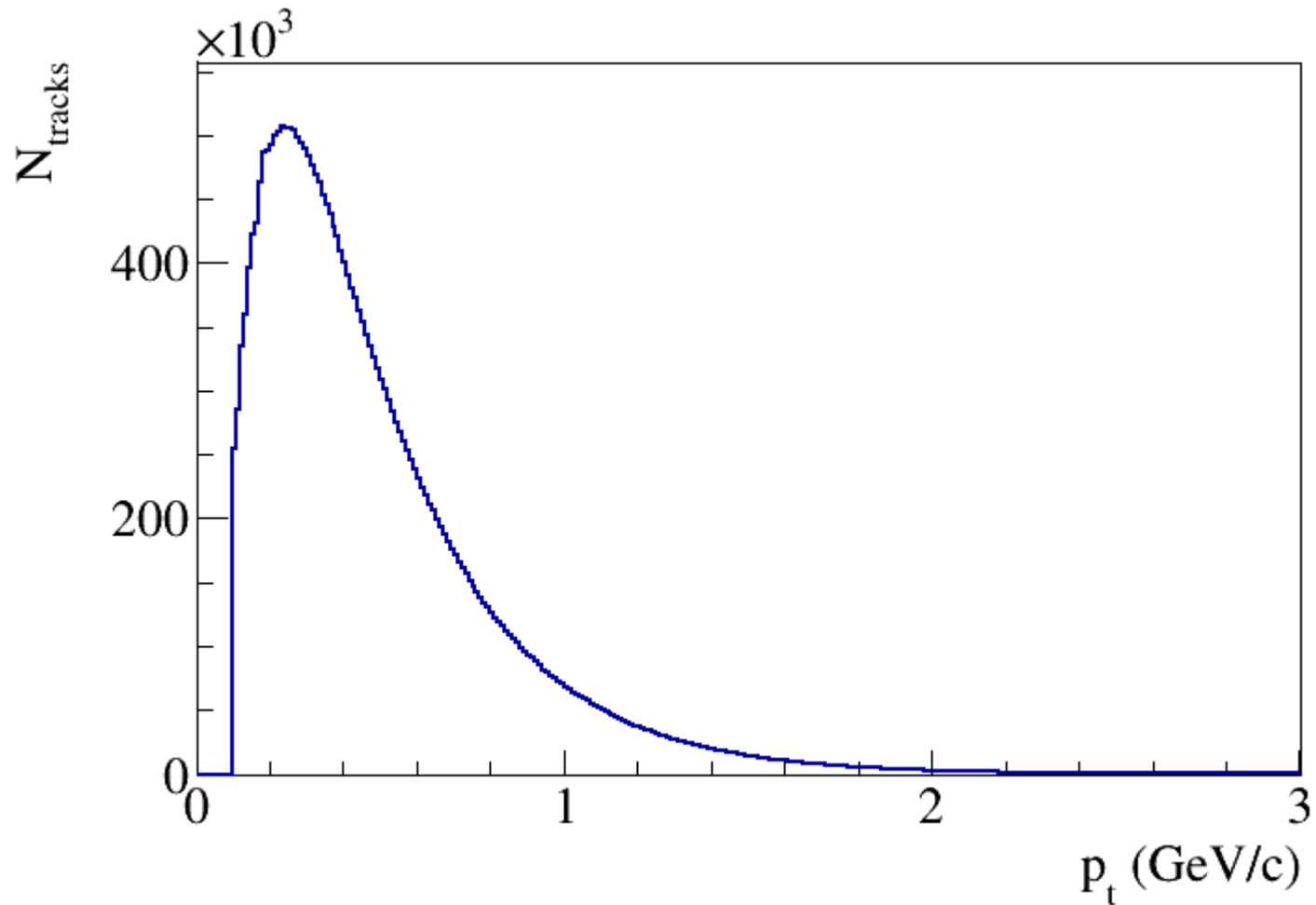
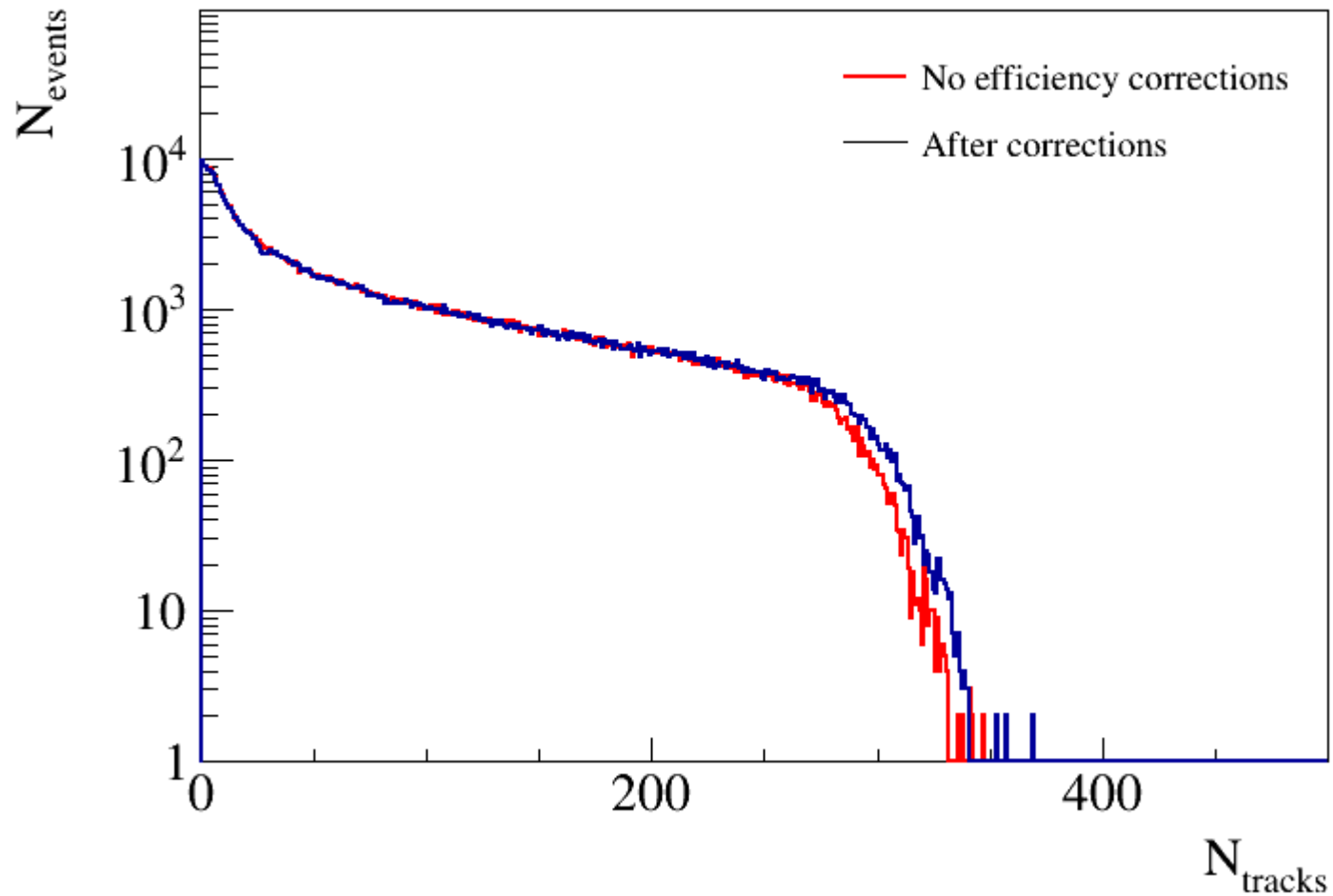# Output of centrality wagon: η distribution of accepted tracks

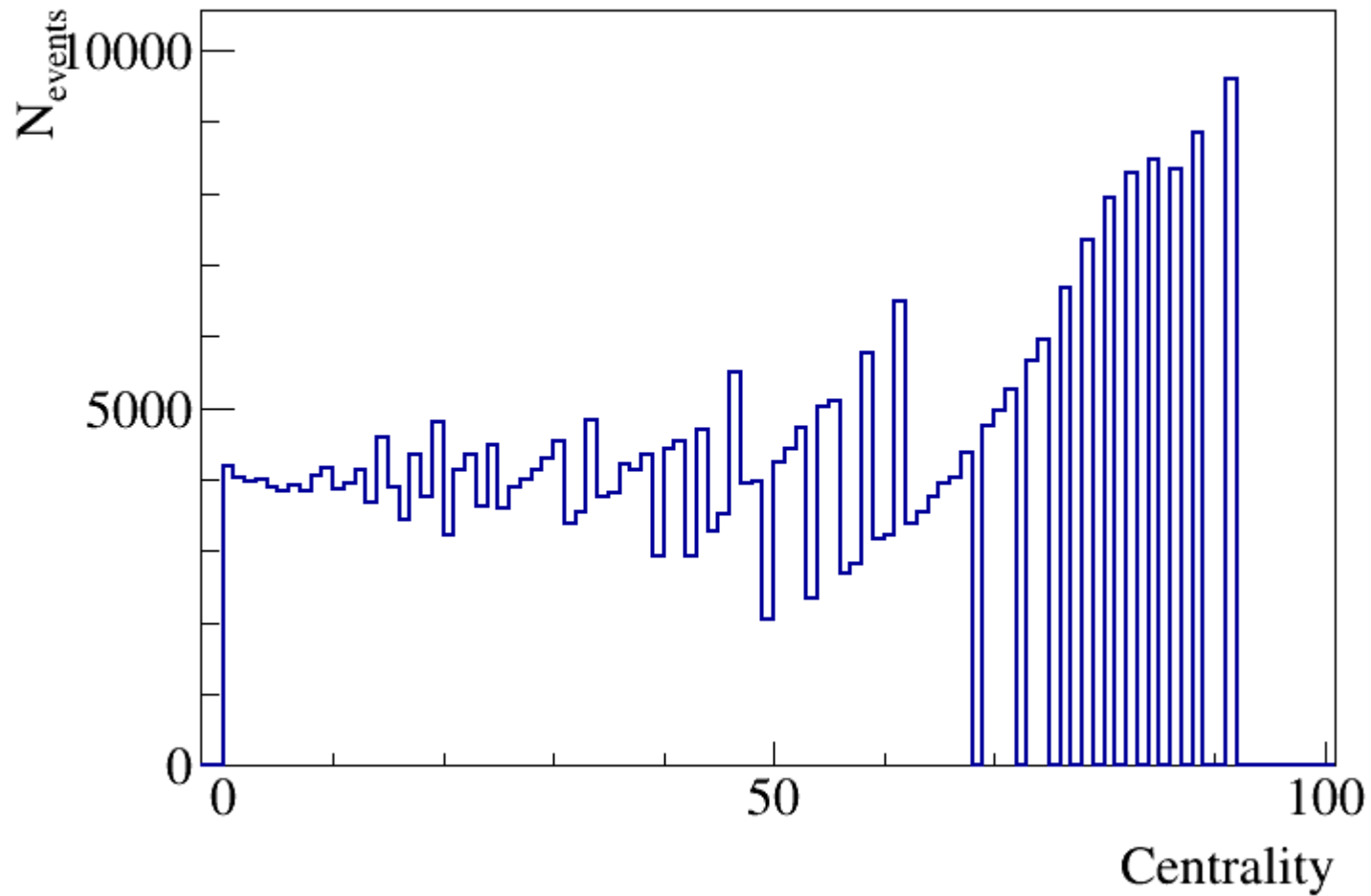# Output of centrality wagon: N_{hits} distribution of accepted tracks

Output of centrality wagon: p_t distribution of accepted tracks

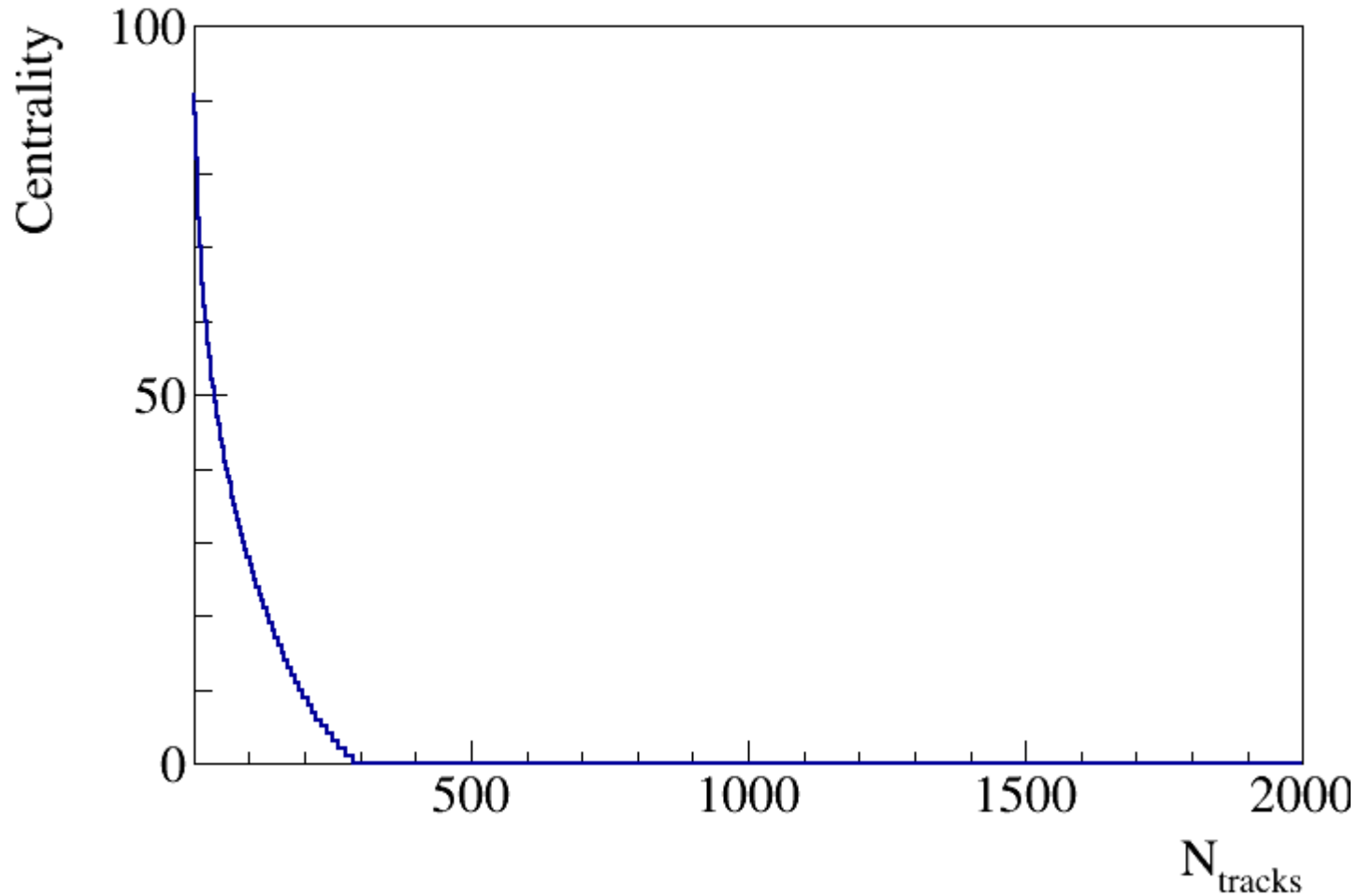# Output of centrality wagon: multiplicity distribution

Output of centrality wagon: centrality distribution for accepted events

Output of centrality wagon: number of tracks to centrality convertion table

Already exists for request-25!

Output of centrality wagon: track reconstruction efficiency VS. Z_{vertex} and η

Already exists!