Trig. Efficiency

CCT2 (or CCT) = MBT x BD(n>=4) = BT x FD x BD(n>=4);

Eff(BT) = 100%

Eff(cct2) = Eff(BD) * Eff(FD)

$$\epsilon_{\mathrm{BD}} = \frac{N(\mathrm{BD} \geqslant 4 \wedge \mathrm{MBT})}{N(\mathrm{MBT})}.$$

$$\epsilon_{\mathrm{FD}} = \frac{N(\mathrm{FD} \wedge \mathrm{CCT1})}{N(\mathrm{CCT1})}$$

Eff(BD):

- 1 ion Xe (or All Xe + plp cut)
- nTrVtxMpd >=2
- Vtx |Z| < 1cm
- Vtx R < 1.5 cm
- Amp_{FD}<4300
- MBT mask
- For numerator:
  - + N(BD) > 4

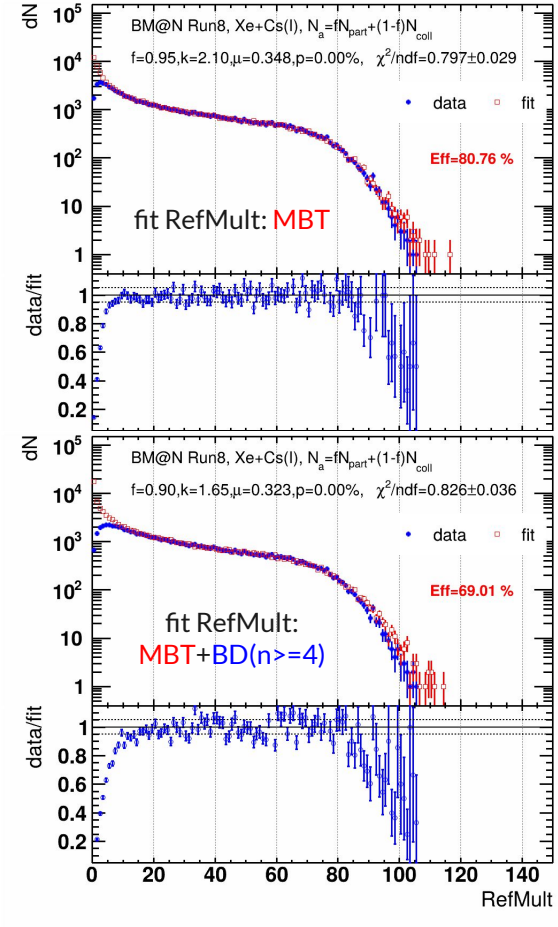
Eff(FD):

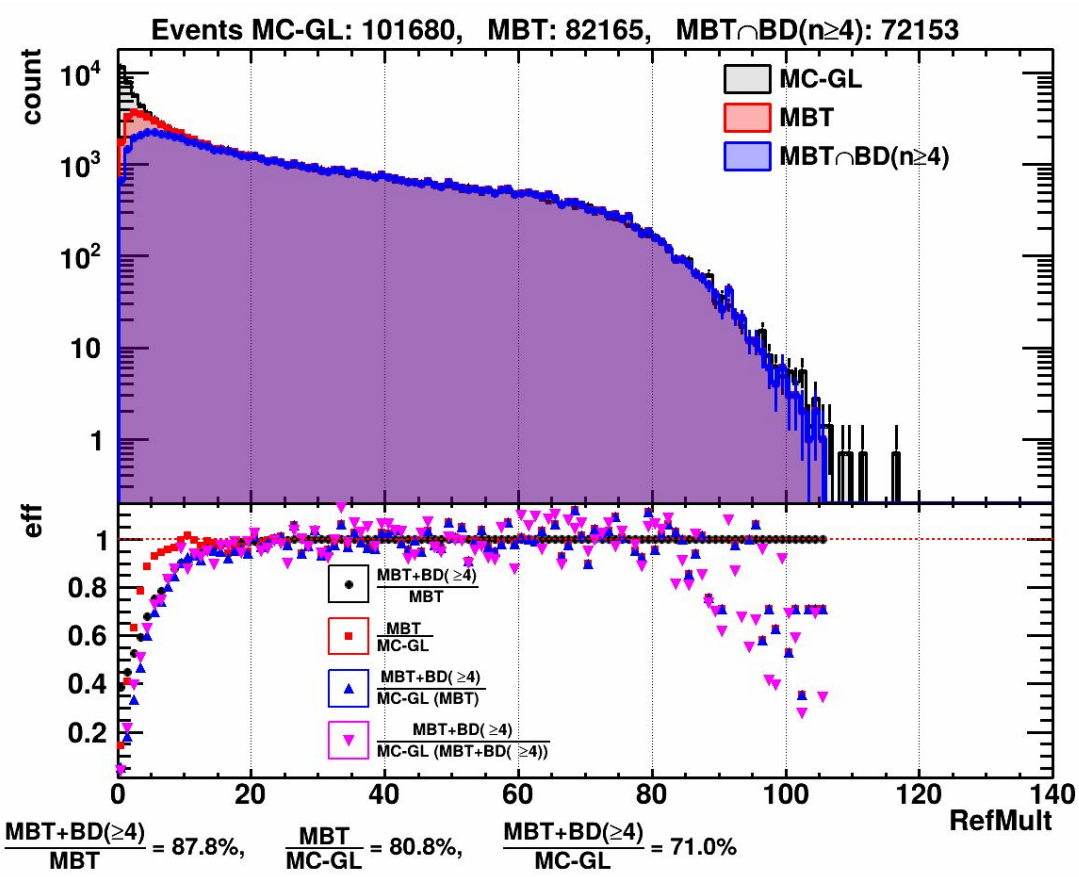
- 1 ion Xe
- nTrVtxMpd >=2
- Vtx |Z| < 1cm
- Vtx R < 1.5 cm
- CCT1 mask
- For numerator:
  - + Amp_{FD}<4300

RefMult:

- 0.7<eta<2.7 (2.5)
- 0.05<p_T<2.0
- dca<1

Run Id 7865-7890

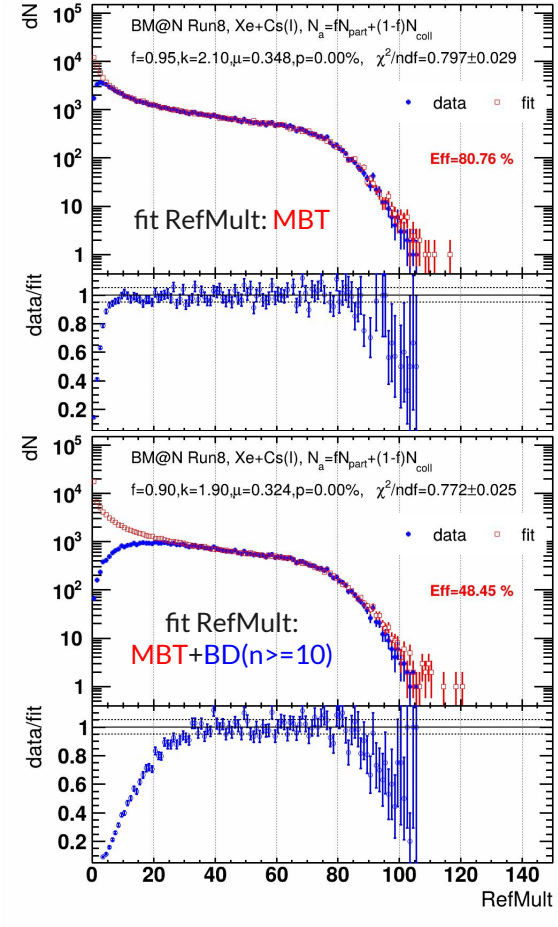


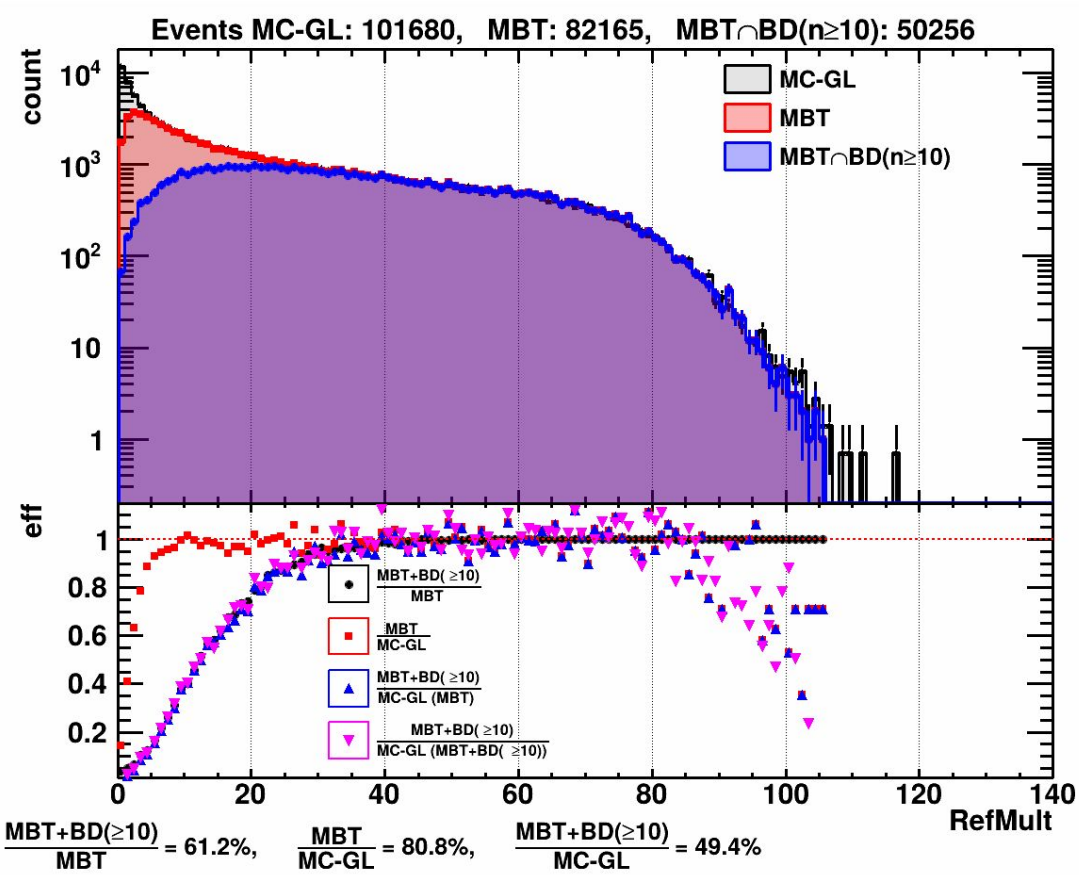


Относительно MBT: 71.0%

Глаубер предсказывает 69% (нижний фит)

Run Id 7865-7890

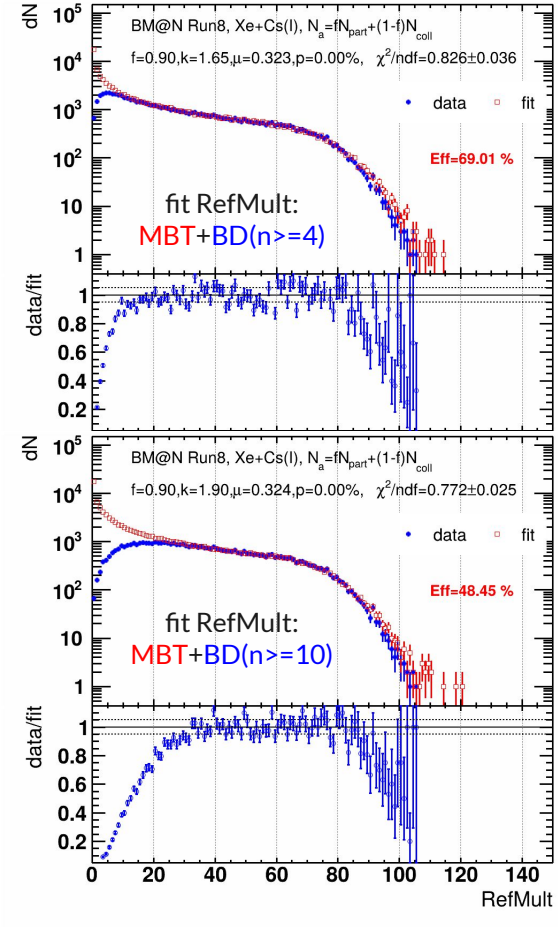


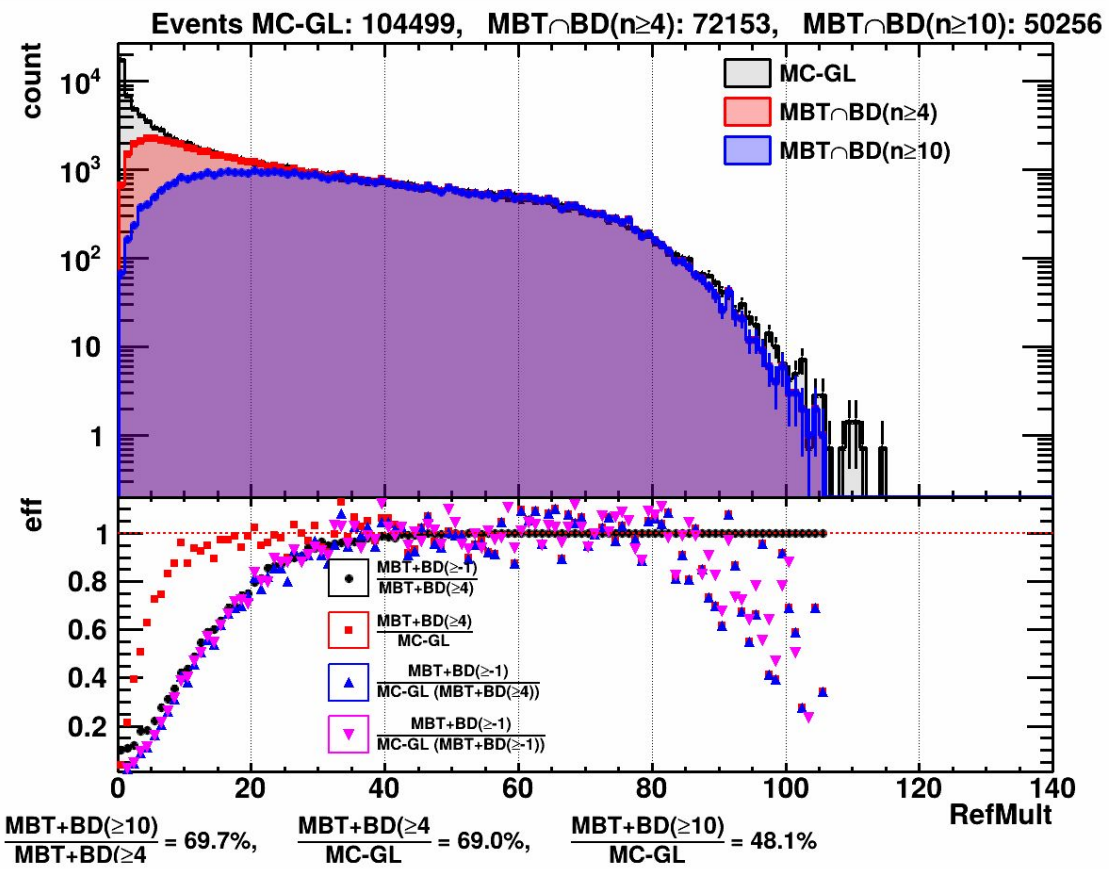


Относительно MBT: 49.4%

Глаубер предсказывает 48.45% (нижний фит)

Run Id 7865-7890

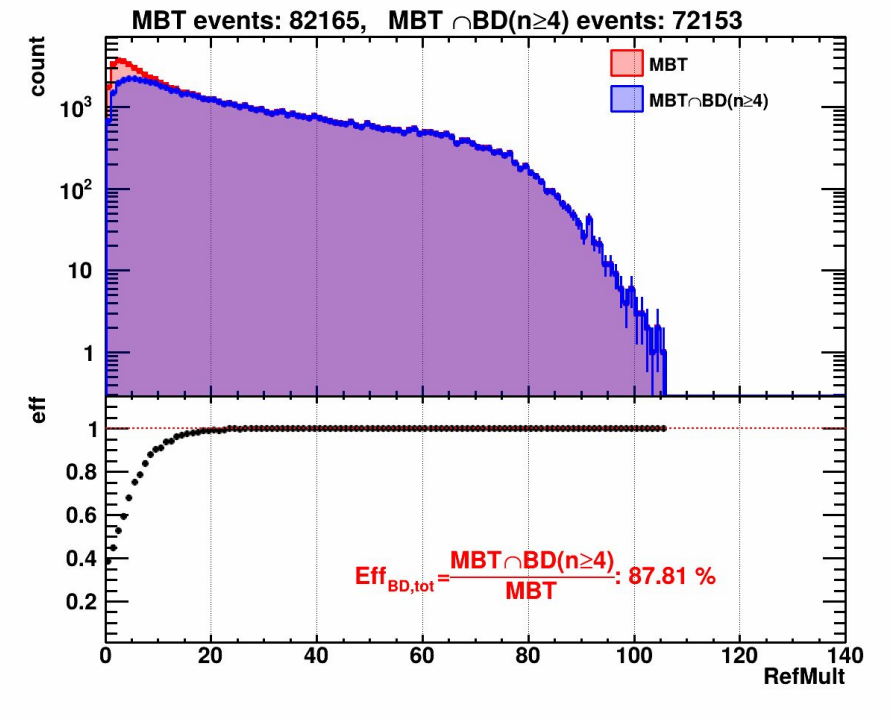




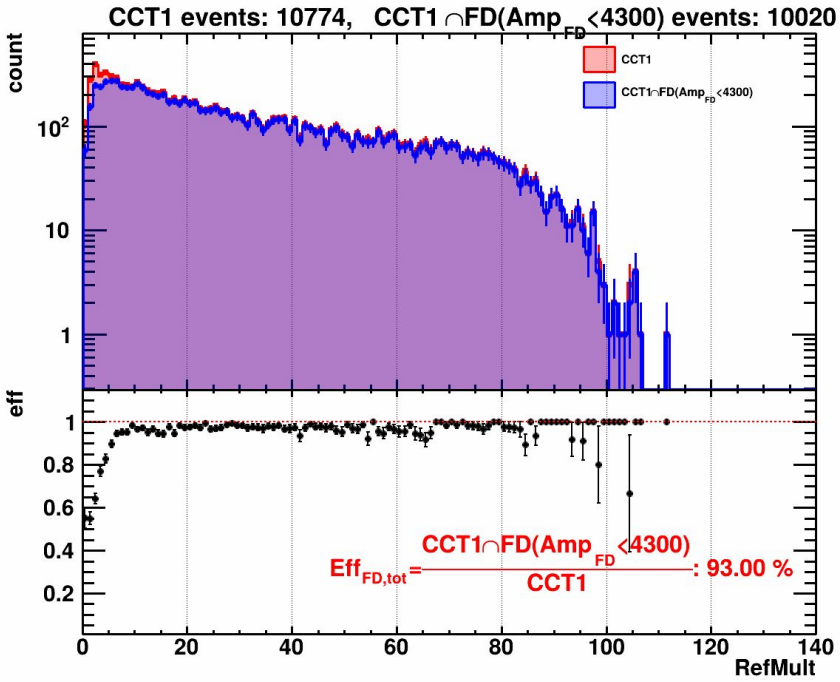
Относительно MBT: 48.1%

Глаубер предсказывает 48.45% (нижний фит)

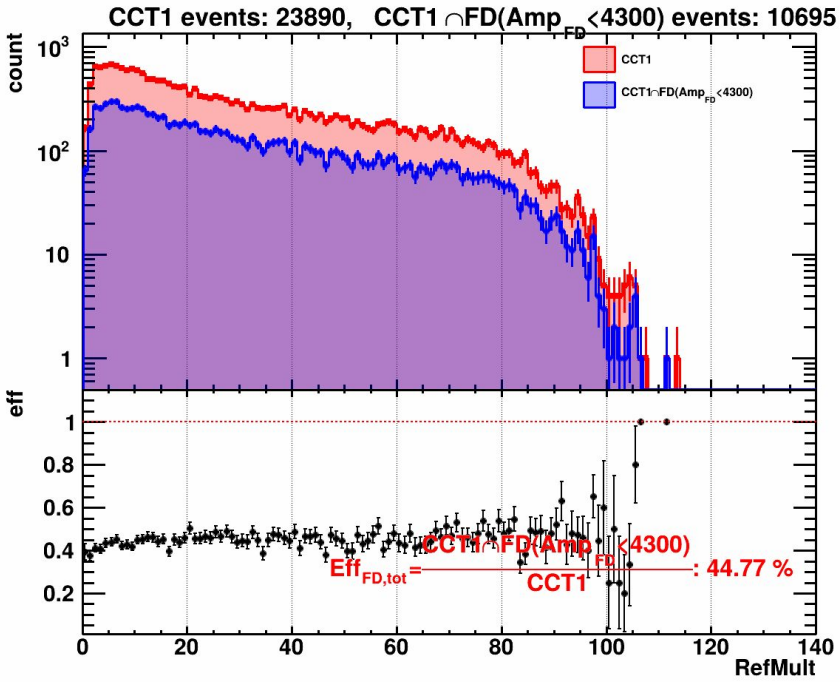
All Xe (BC1) + plp cut

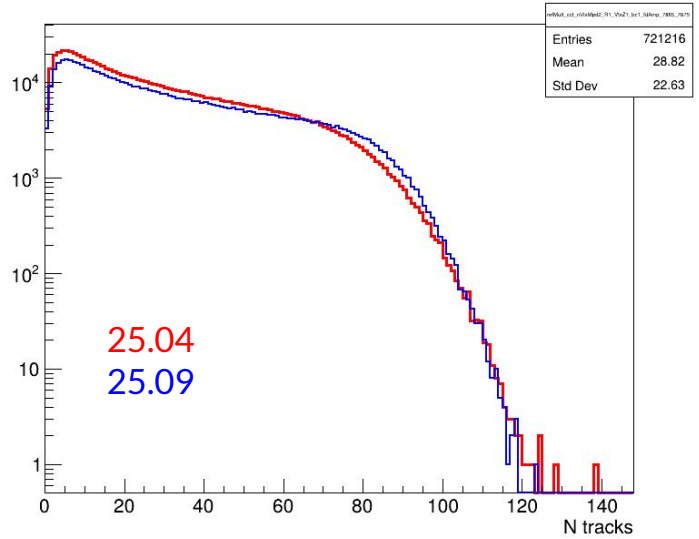


1 Xe (BC1)

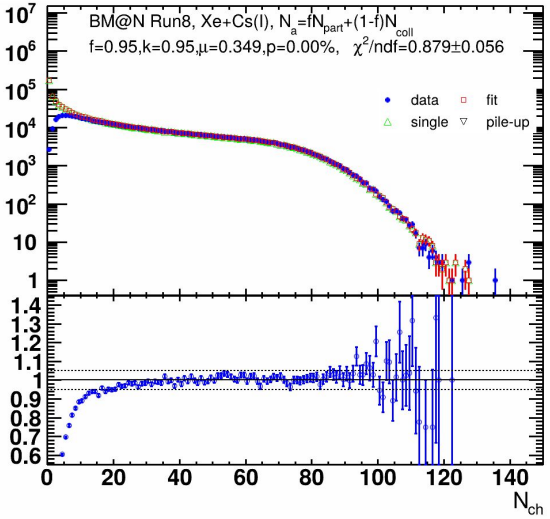


All Xe (BC1) +plp cut

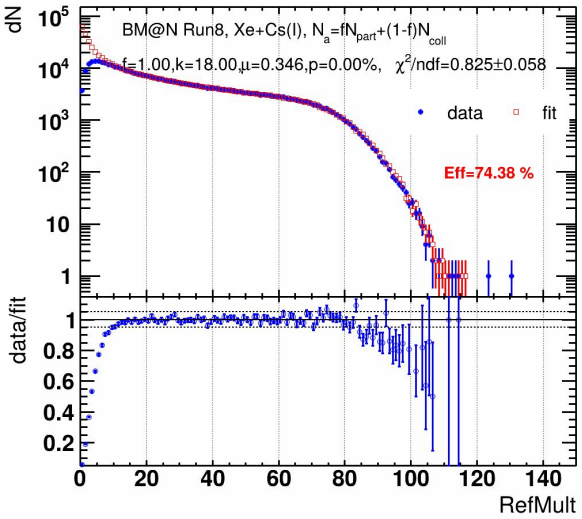




25.04



25.09



Events:

- CCT2
- nTrVtx>1
- $|V_z|<1.0$, $V_R<1.5$
- bc1 cut

Tracks:

- 0.7<eta<2.5
- $0.05<p_T<2.0$
- DCA<1



CCT2 = MBT x BD(n>=4)

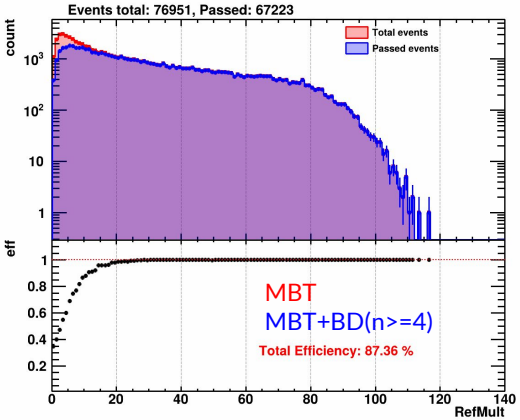
Run Id 7865-7890 (events: 77k-46k)

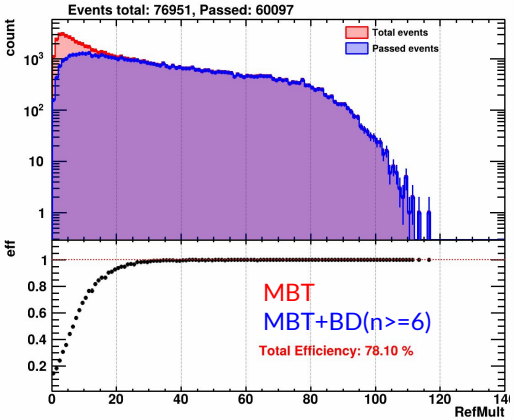
Events:

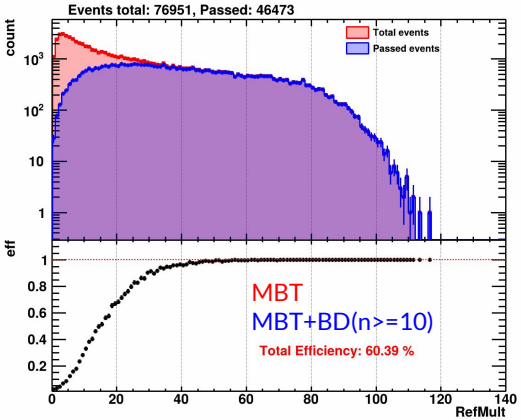
- nTrVtx>1
- $|V_z|<1.0$ $V_R<1.5$
- bc1 cut

RefMult:

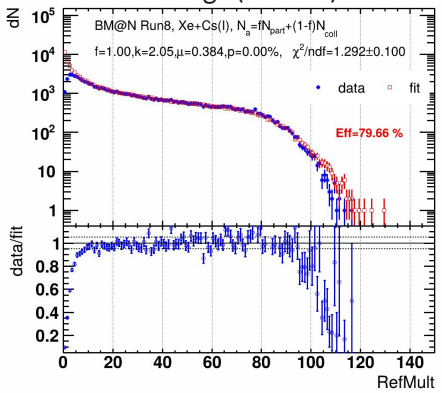
- 0.7<eta<2.8
- $0.05<p_T<2.0$
- dca<1



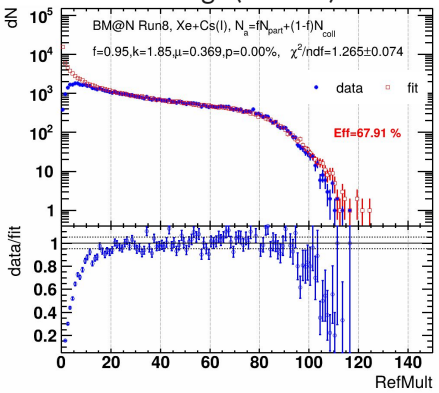




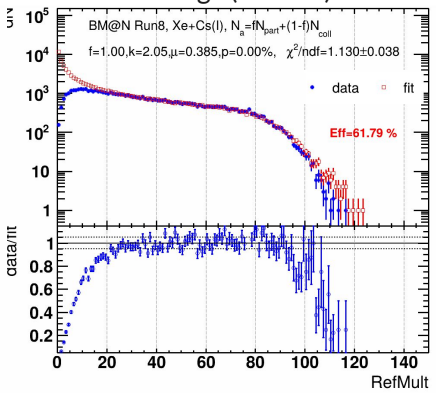
fit RefMult: MBT
fit range (15-110)



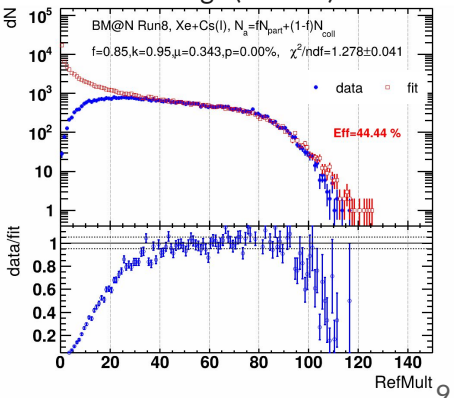
fit RefMult: MBT+BD(n>=4)
fit range (20-110)



fit RefMult: MBT+BD(n>=6)
fit range (30-110)



fit RefMult: MBT+BD(n>=10)
fit range (38-110)



MBT - события набранные с триггерной маской MBT + каты на события (предыдущий слайд)

MBT+BD (Data) дополнительно накладывается условие на наличие не менее 4 (6 или 10) сигналов в триггерном окне в BD.

Eff_{total} = MBT+BD / MC-GL - то, что получаем при фитировании MC-GL

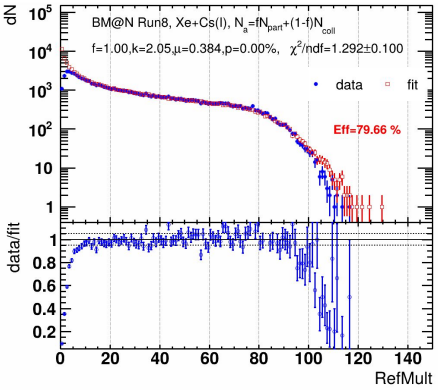
Eff_{total} = Data / MC-GL =
= Data/MC-GL * MBT/MBT =
= Data/MBT * MBT/MC-GL =
= Eff_{Trig} * Eff_{MBT}

Относительно MBT:

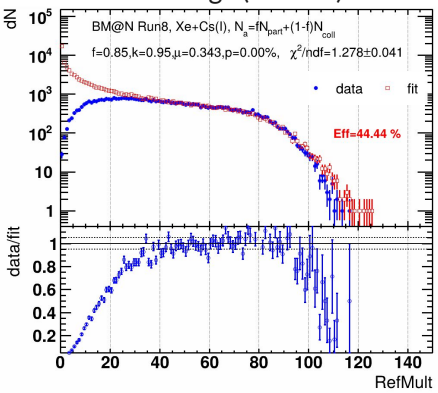
Eff(MBT+BD(n>=10)) = 0.604 * 0.797 = 0.48

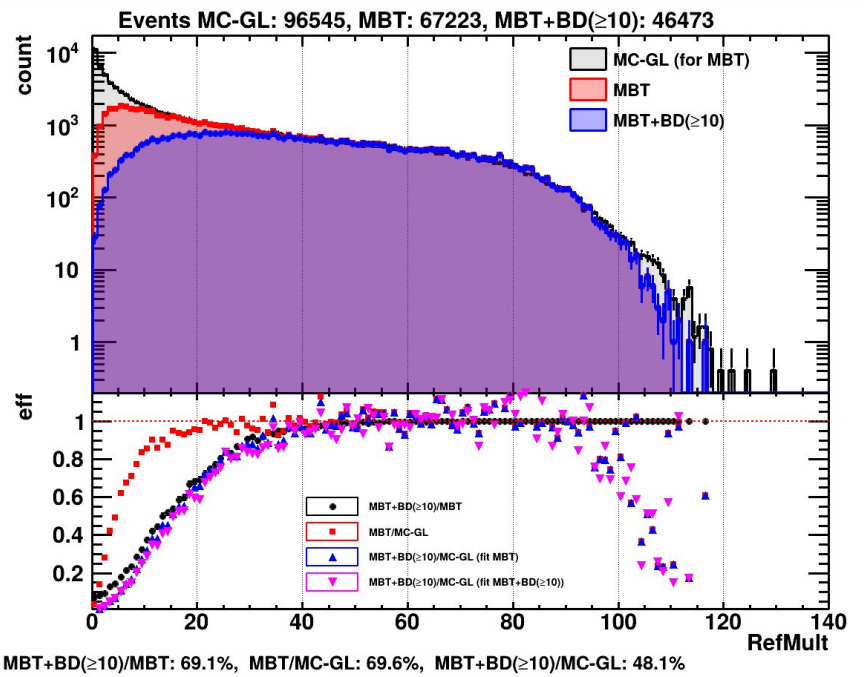
Глаубер предсказывает 0.44 (нижний фит)

fit RefMult: MBT
fit range (15-110)



fit RefMult: MBT+BD(n>=10)
fit range (30-110)



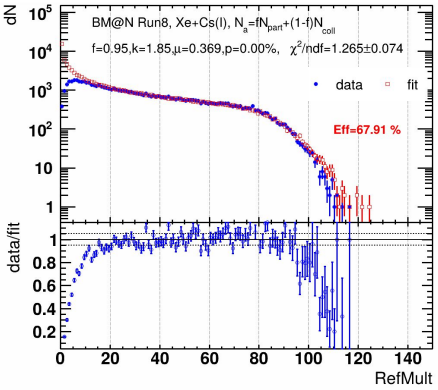


Относительно MBT+BD(n>=4):

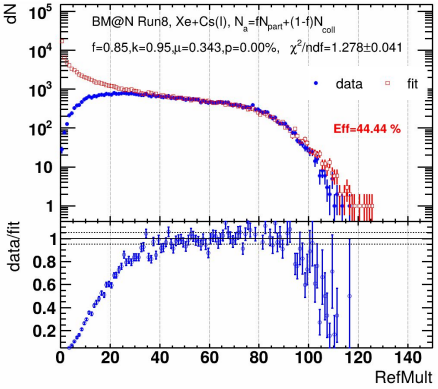
Eff(MBT+BD(n>=10)) = 0.691 * 0.679 = 0.47

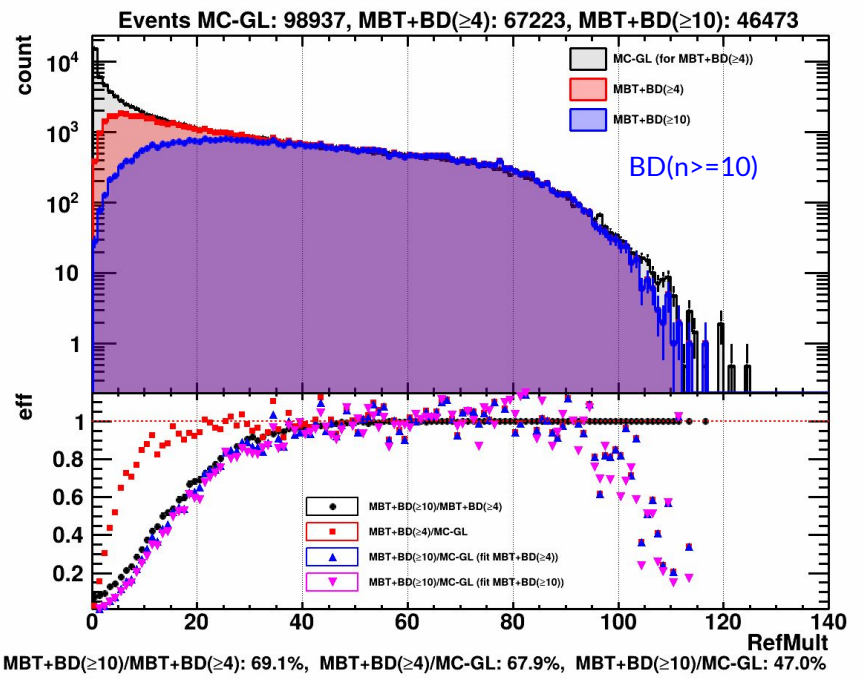
Глаубер предсказывает 0.44 (нижний фит)

fit RefMult: MBT+BD(n>=4)
fit range (20-110)



fit RefMult: MBT+BD(n>=10)
fit range (30-110)

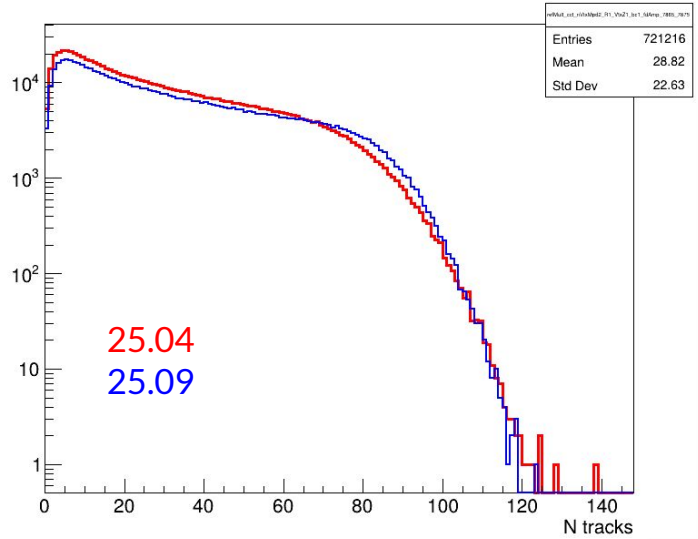




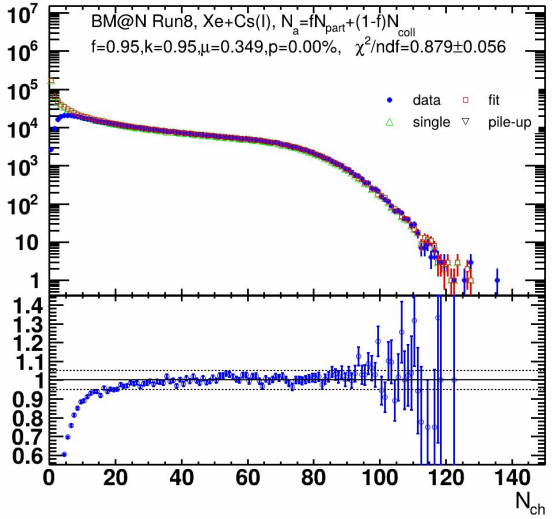
MBT+BD(≥10)/MBT+BD(≥4): 69.1%, MBT+BD(≥4)/MC-GL: 67.9%, MBT+BD(≥10)/MC-GL: 47.0%

Полная эффективность относительно MBT

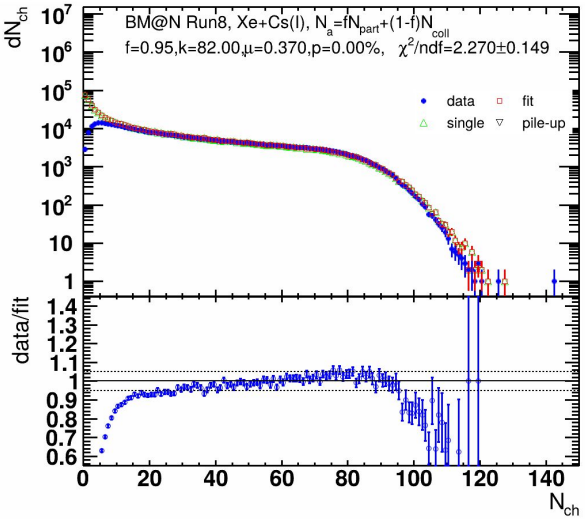
Сет	Eff_{MC}= MBT / MC-GL	Eff_{trig} = сет / MBT	Eff = Eff_{MC}*Eff_{trig}	Предсказания MC-GL (сет / MC-GL)	Разница
MBT+BD(n>=4)	0.796	0.874	0.696	0.679	~3.5%
MBT+BD(n>=6)	0.796	0.781	0.621	0.618	~1.5%
MBT+BD(n>=10)	0.796	0.604	0.481	0.444	~8%



25.04



25.09



Events:

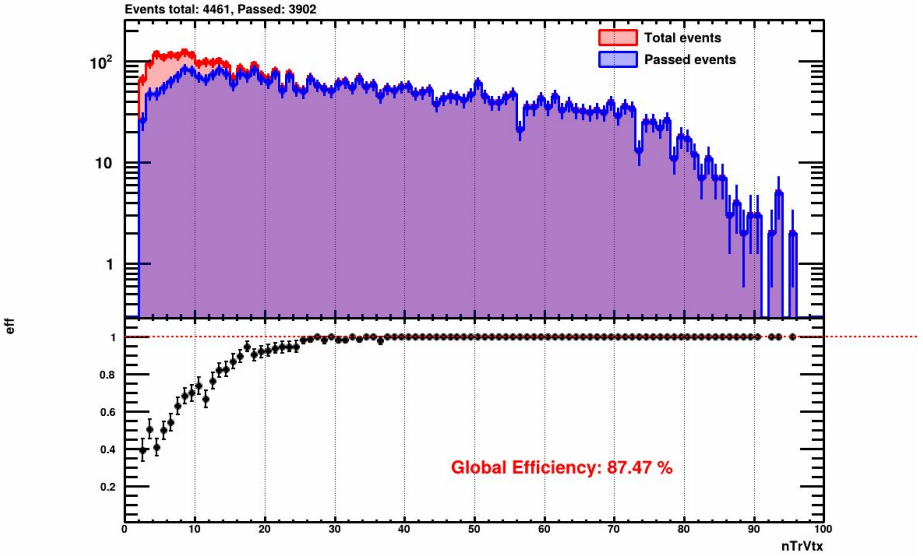
- CCT2
- nTrVtx>1
- $|V_z|<1.0$, $V_R<1.5$
- bc1 cut

Tracks:

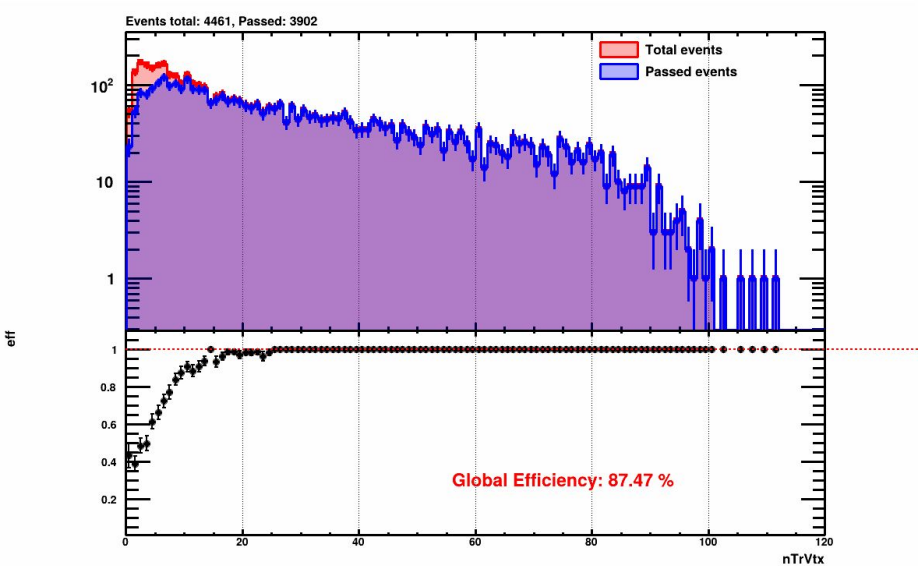
- 0.7<eta<2.7
- $0.05<p_T<2.0$
- DCA<1

eff CCT2 = BD x FD x BT , eff BT = 100%

eff BD (nBD>=4)

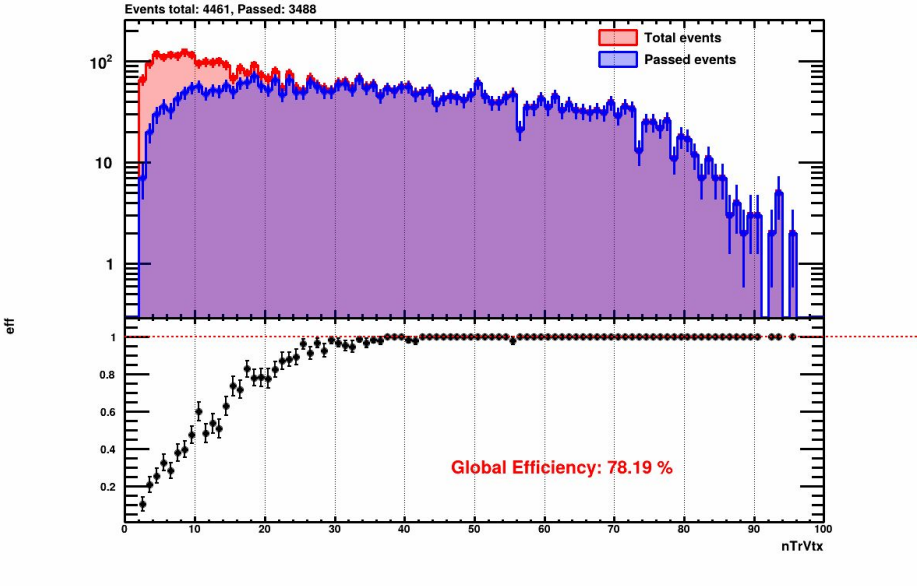


nTrVtx

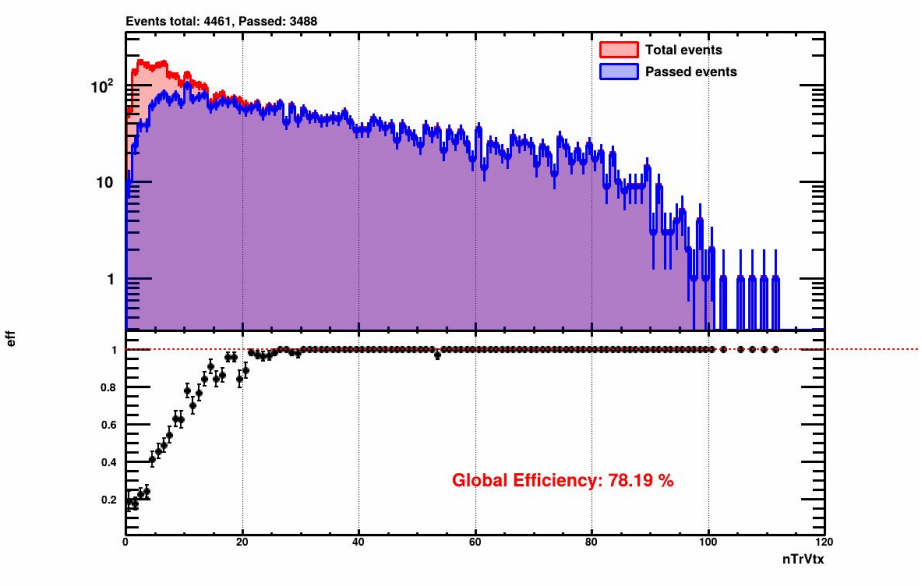


mult

eff BD (nBD>=6)



nTrVtx



mult

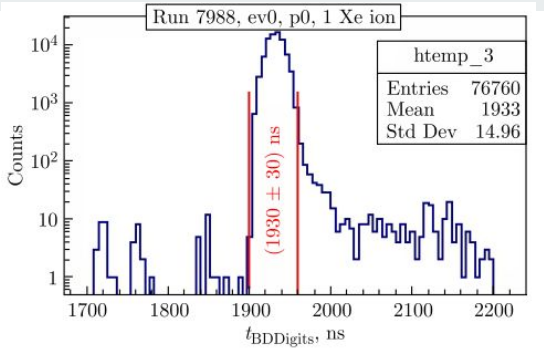
Efficiency

$$\epsilon_{BD} = \frac{N(BD \geqslant 4 \wedge MBT)}{N(MBT)}.$$

$$\epsilon_{FD} = \frac{N(FD \wedge CCT1)}{N(CCT1)}$$

$$\epsilon_{CCT} = \epsilon_{BD}\epsilon_{FD}$$

BT = BC1 x BC2 x VC
CCT1 = BT x BD(>N)
MBT = BT x FD(A<A_{max})
CCT = MBT x BD(>N) or CCT2
CCT = BT x FD(A<A_{max}) x BD(>N)



Eff(BD):

- 1 ion Xe
- nTrPV >=2
- |Z|<1cm
- R<1.5 cm
- t_{FD}~ 6 channels TQDC (~50 нс)
- Amp_{FD}<4250 (for RunId 7988)
- MBT mask
- For numerator:
  - + N(BD) > 4
  - + t_{BD} from TDC

Eff(FD):

- 1 ion Xe
- nTrPV >=2
- |Z|<1cm
- R<1.5 cm
- CCT1 mask
- For numerator:
  - + Amp_{FD}<4250
  - + t_{FD}~ 6 channels TQDC (~50 нс)

