



Новые результаты симуляций в среде Spdroot

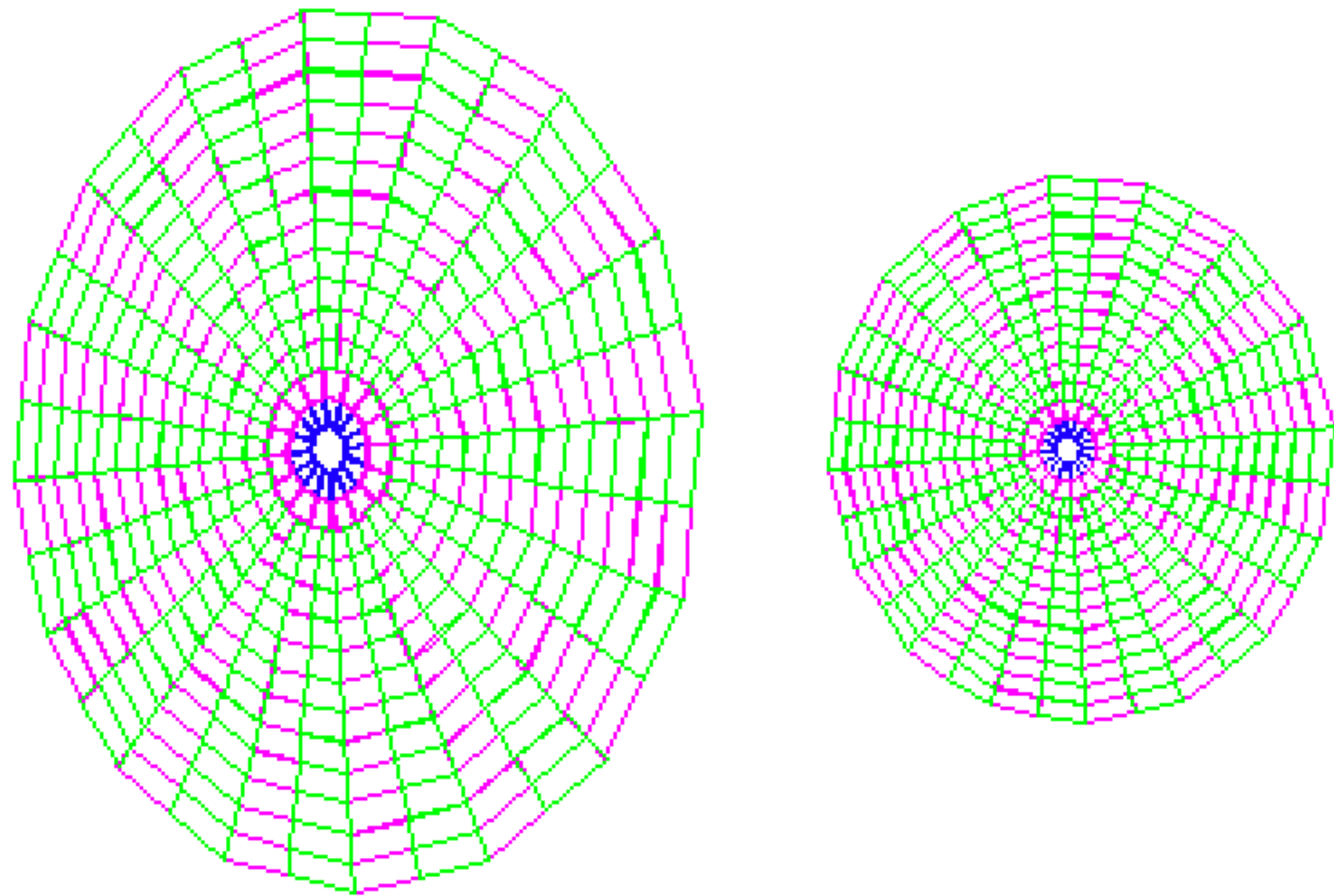
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Солдатов Евгений Юрьевич

20.09.2024
Москва

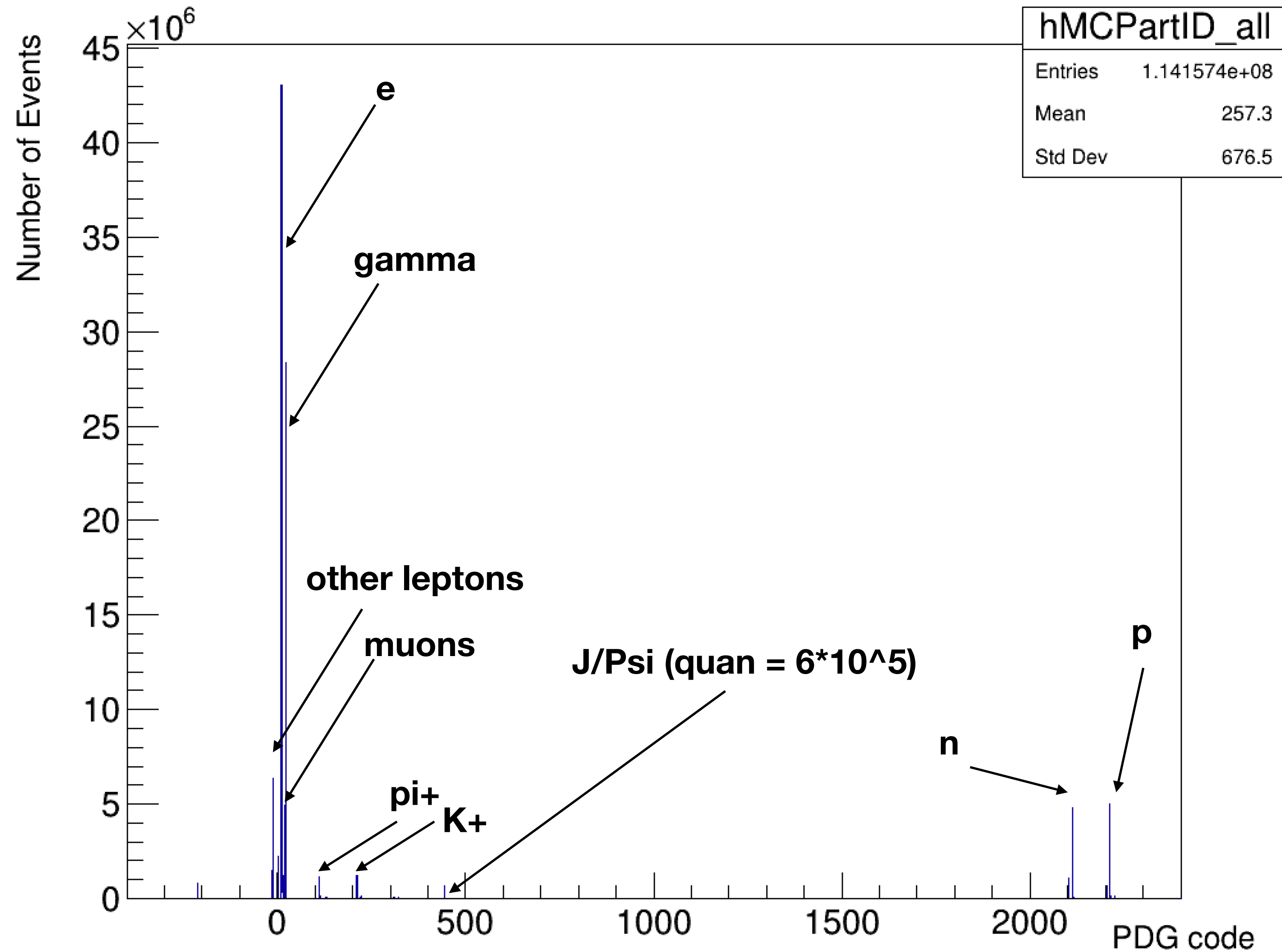
Simulation parameters

- Все симуляции производились с помощью генератора Pythia8
- $\sqrt{s} = 10\text{GeV}$
- Во всех симуляциях был использован **только** детектор bbc, остальные детекторы были отключены (покрытие bbc-региона по η (приблизительно): $[-3.08;4.4] \&\& [3.08;4.4]$)
- Симуляции проводились по J/Psi (слайды 4-18) и по soft QCD (слайды 19-33)
- Для построения всех гистограмм были использованы **каты по типу частицы** (мюоны - для J/Psi процесса и протоны - для Soft QCD процесса), а также **каты по θ** для исходных MC частиц по области детектора bbc $[0;0.1] \&\& [3.05;3.12]$ rad

Bbc geometry

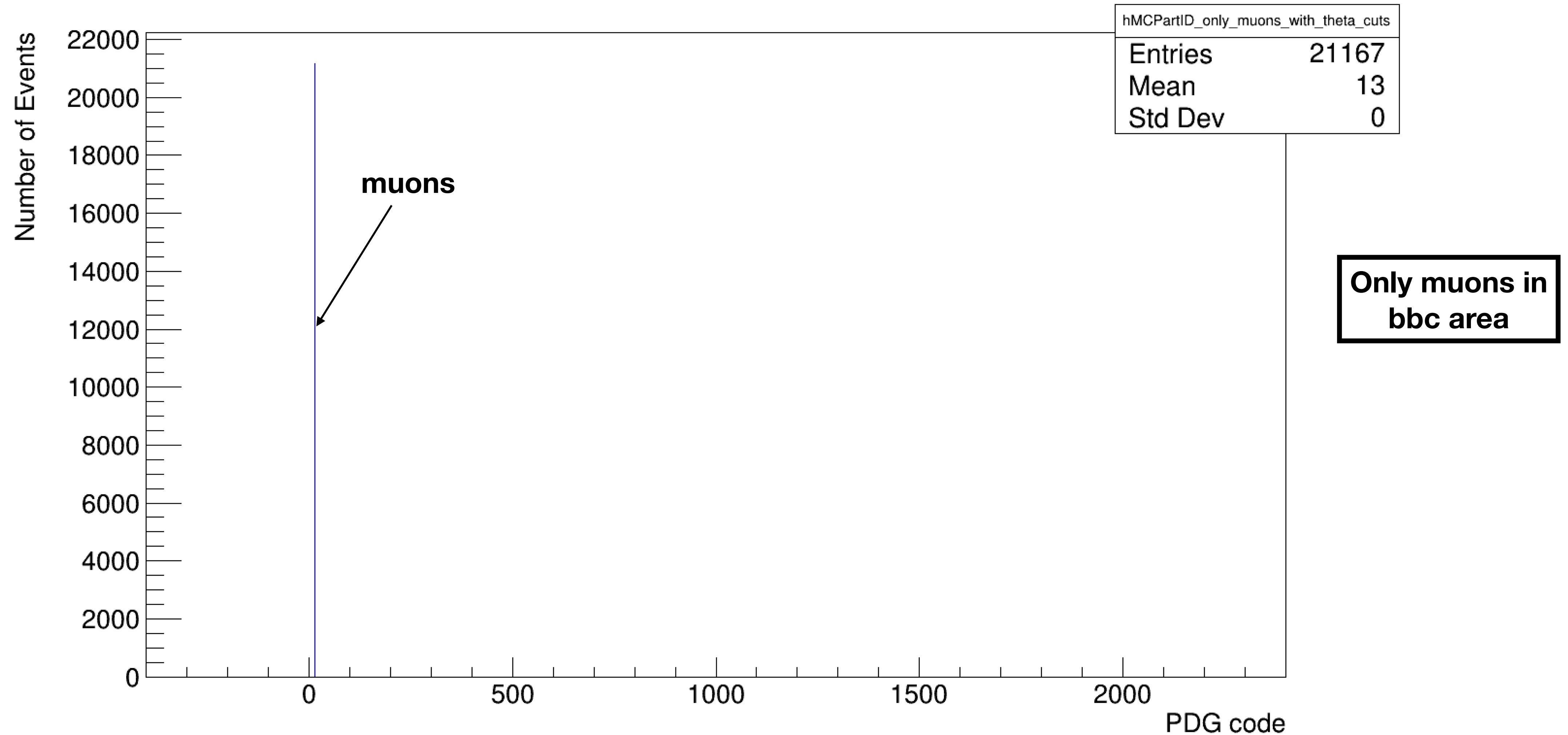


J/Psi 500k event, All produced MC particles

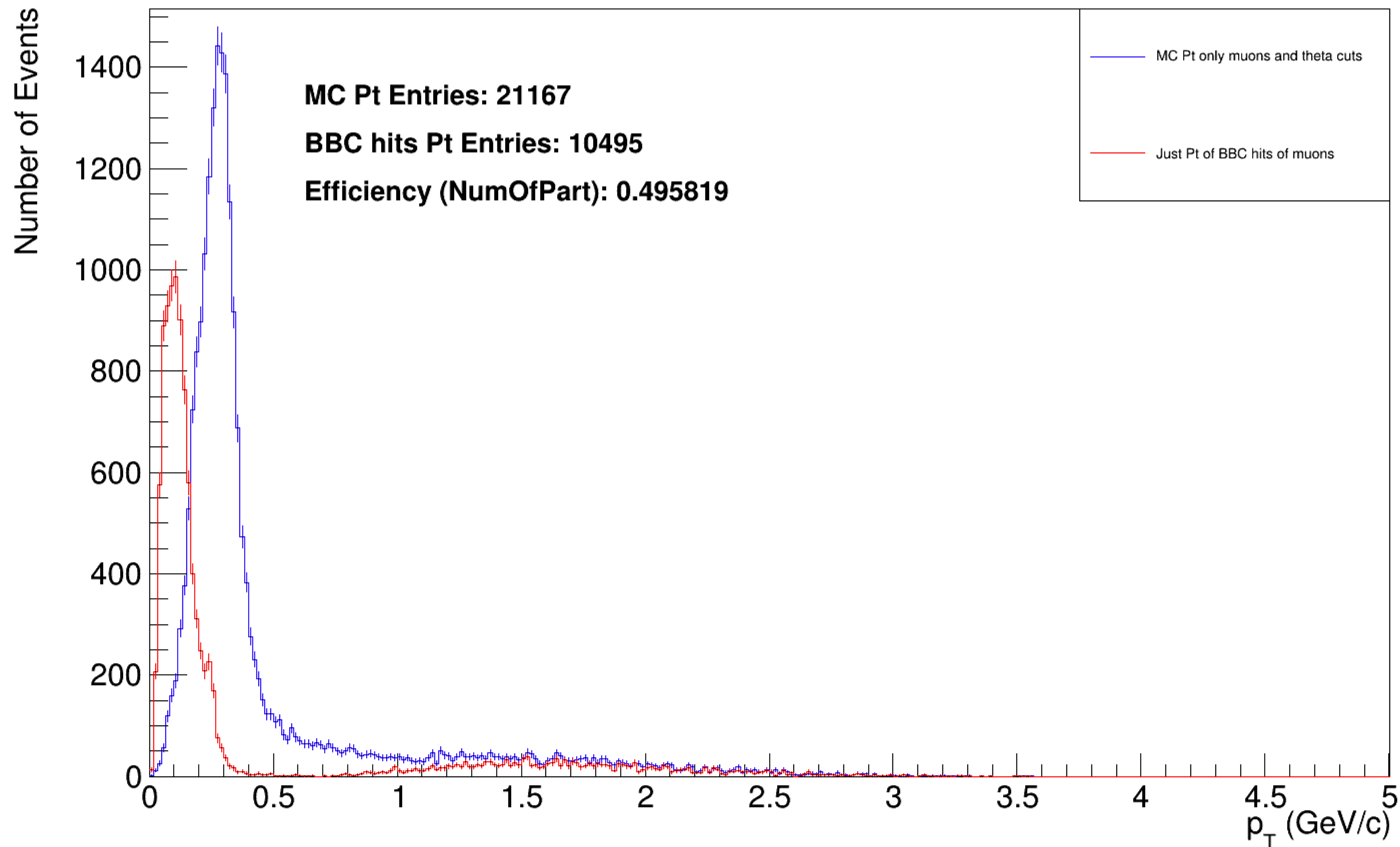


All particles
born in all
directions

J/Psi 500k event, MC muons reached BBC

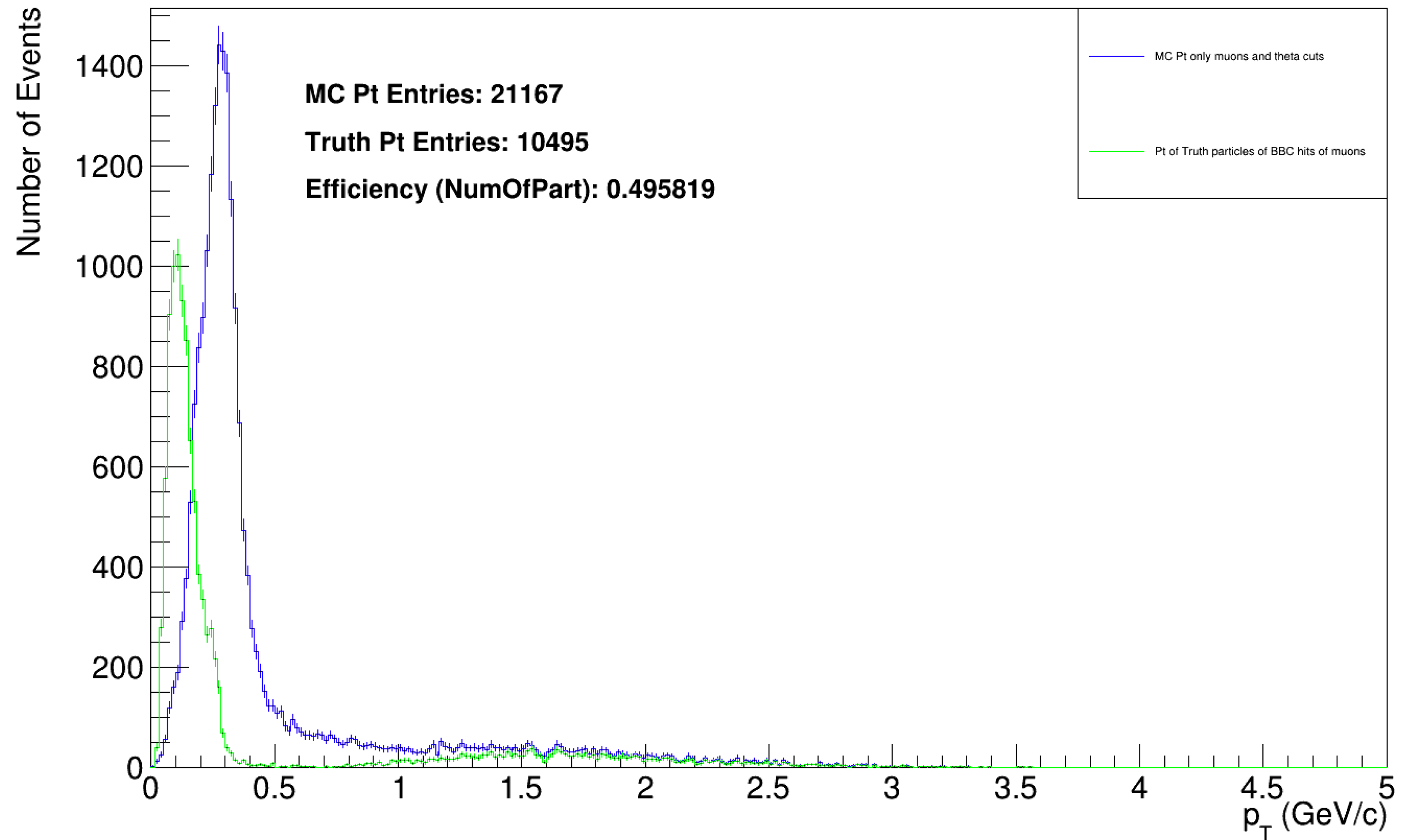


J/Psi 500k event, Pt Comparison between MC and BBC hits



J/Psi 500k event, Pt

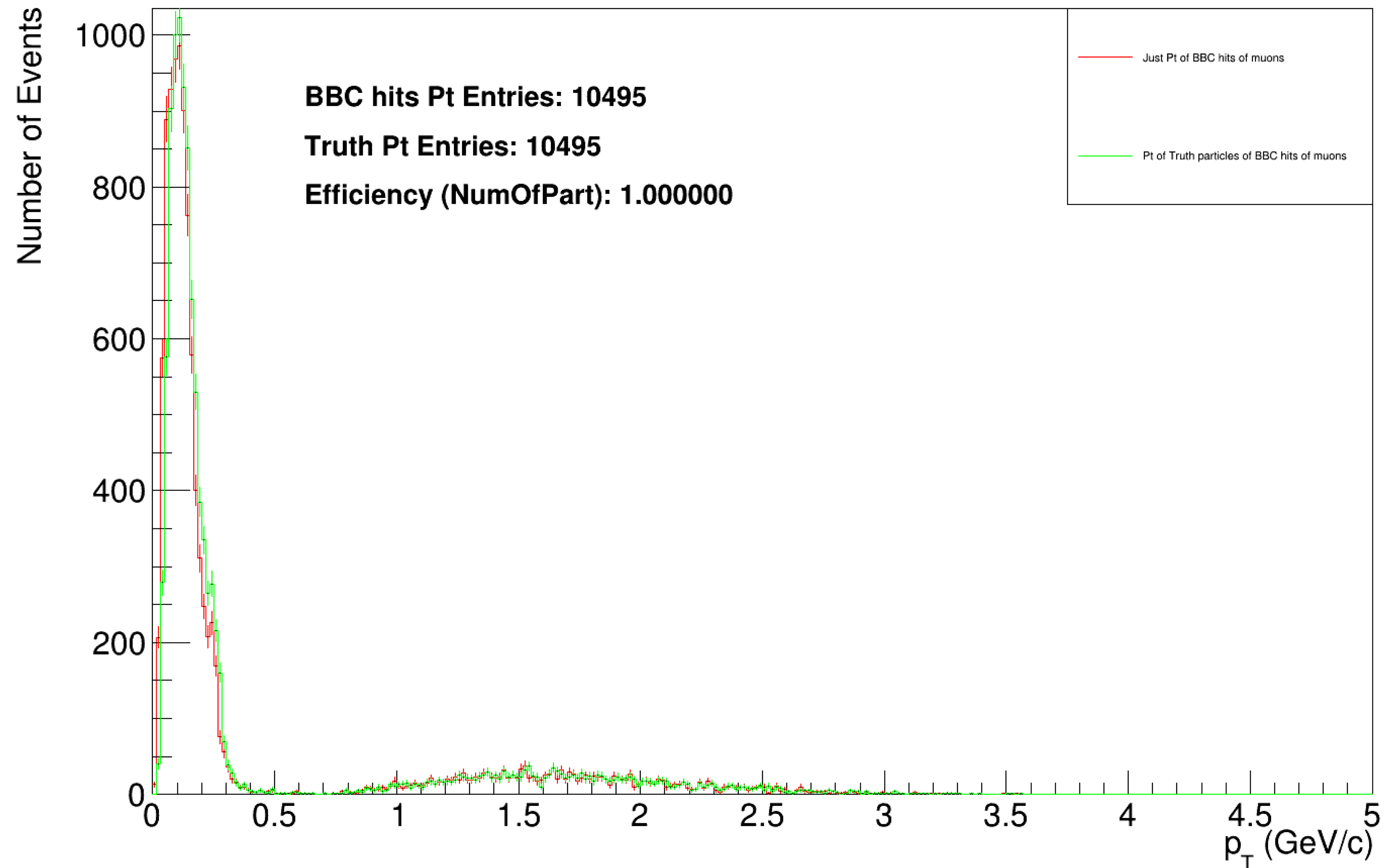
Comparison between MC and Truth particles of BBC hits



**Only muons in
bbc area**

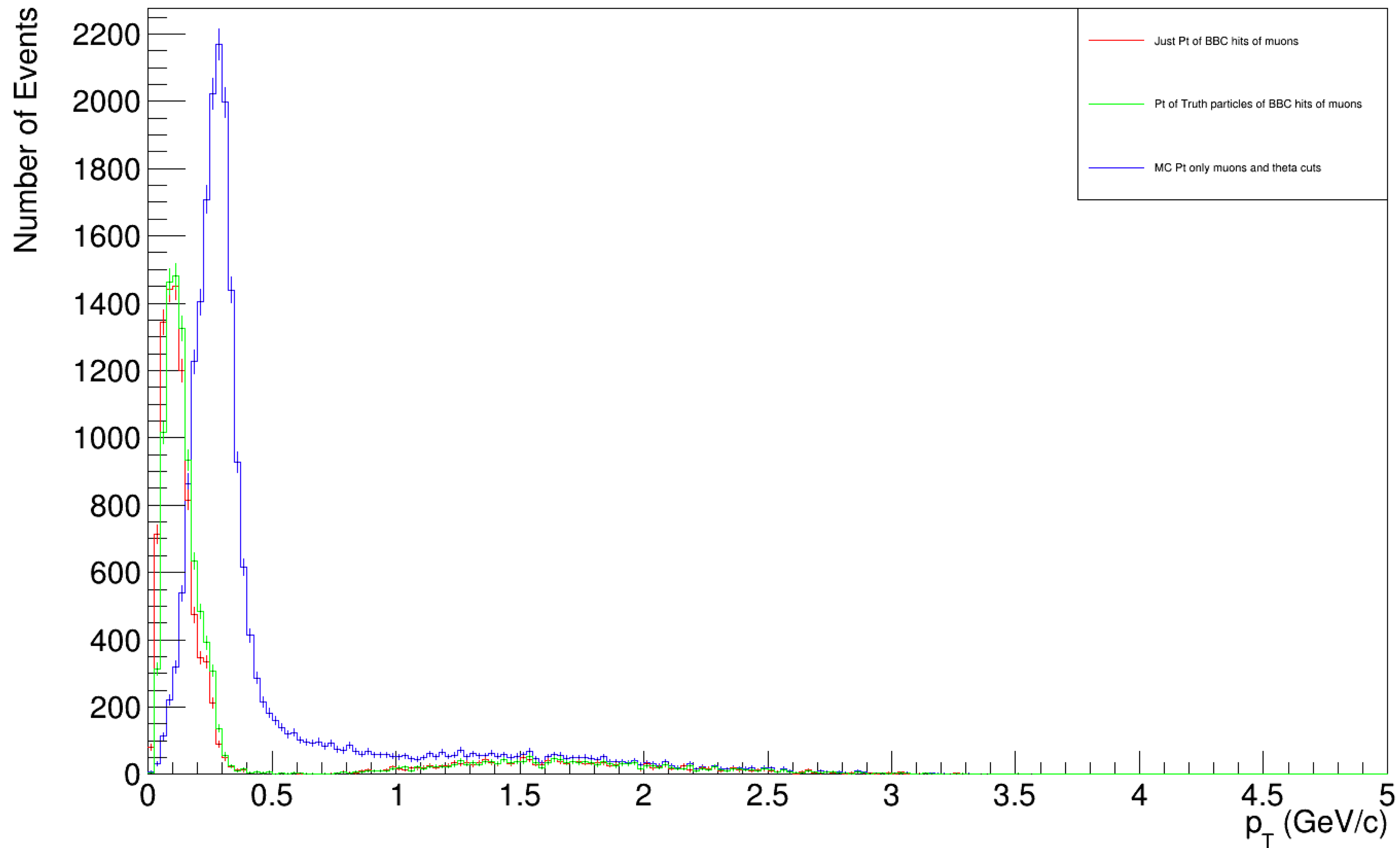
J/Psi 500k event, Pt

Comparison between BBC hits and Truth particles of BBC hits



Only muons in
bbc area

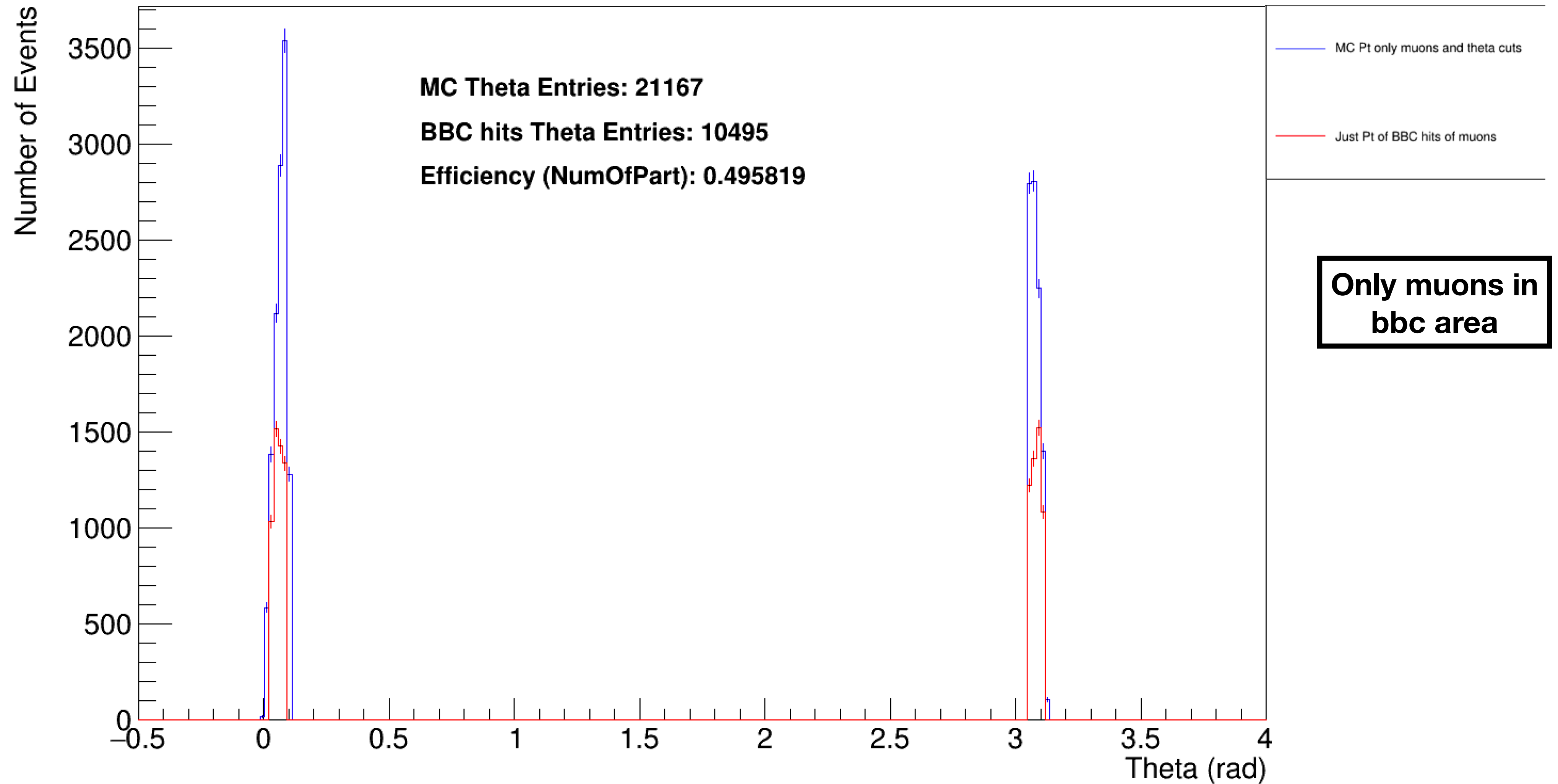
J/Psi 500k event, Pt all together



**Only muons in
bbc area**

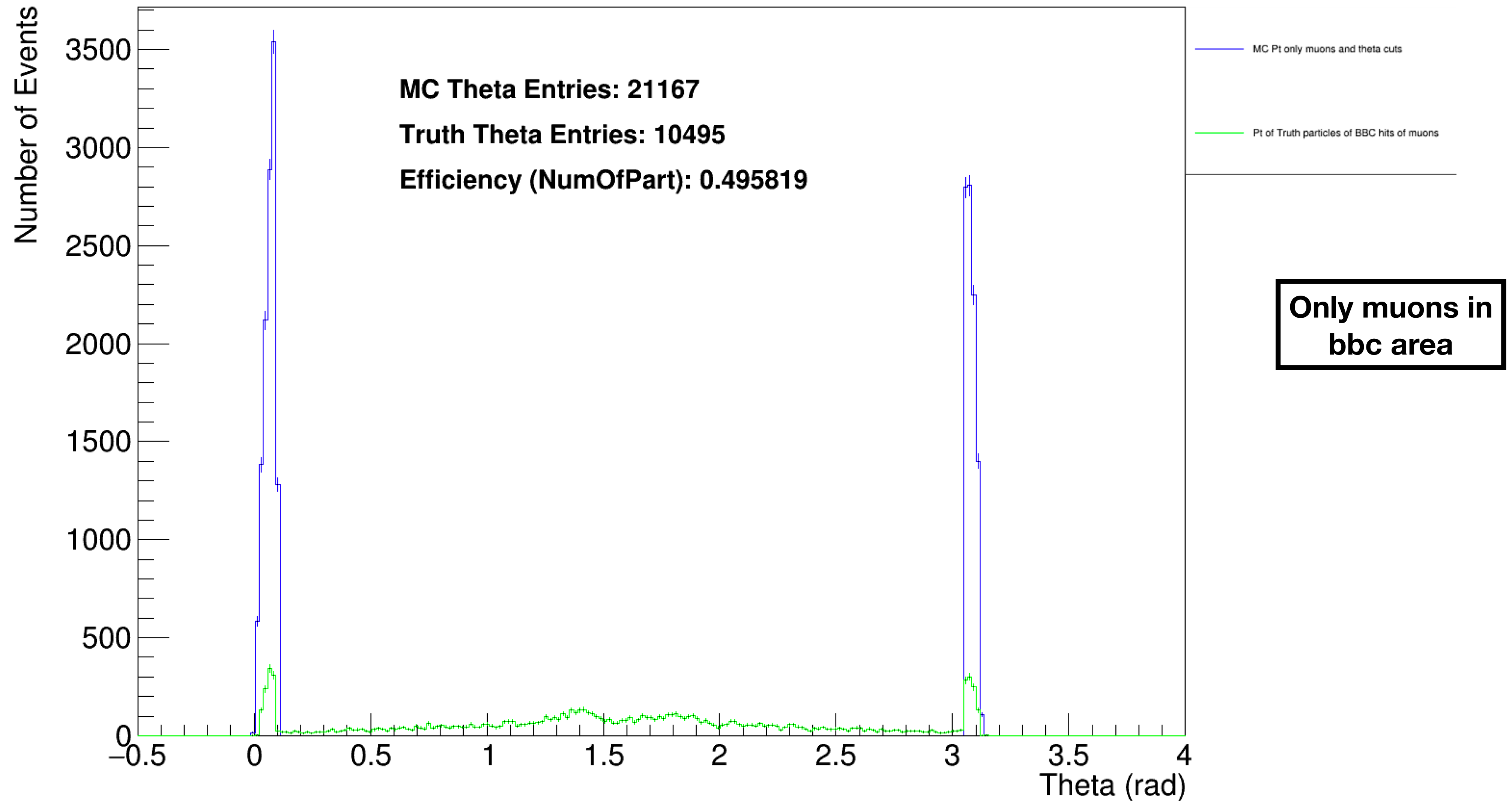
J/Psi 500k event, Theta (θ)

Comparison between MC and BBC hits



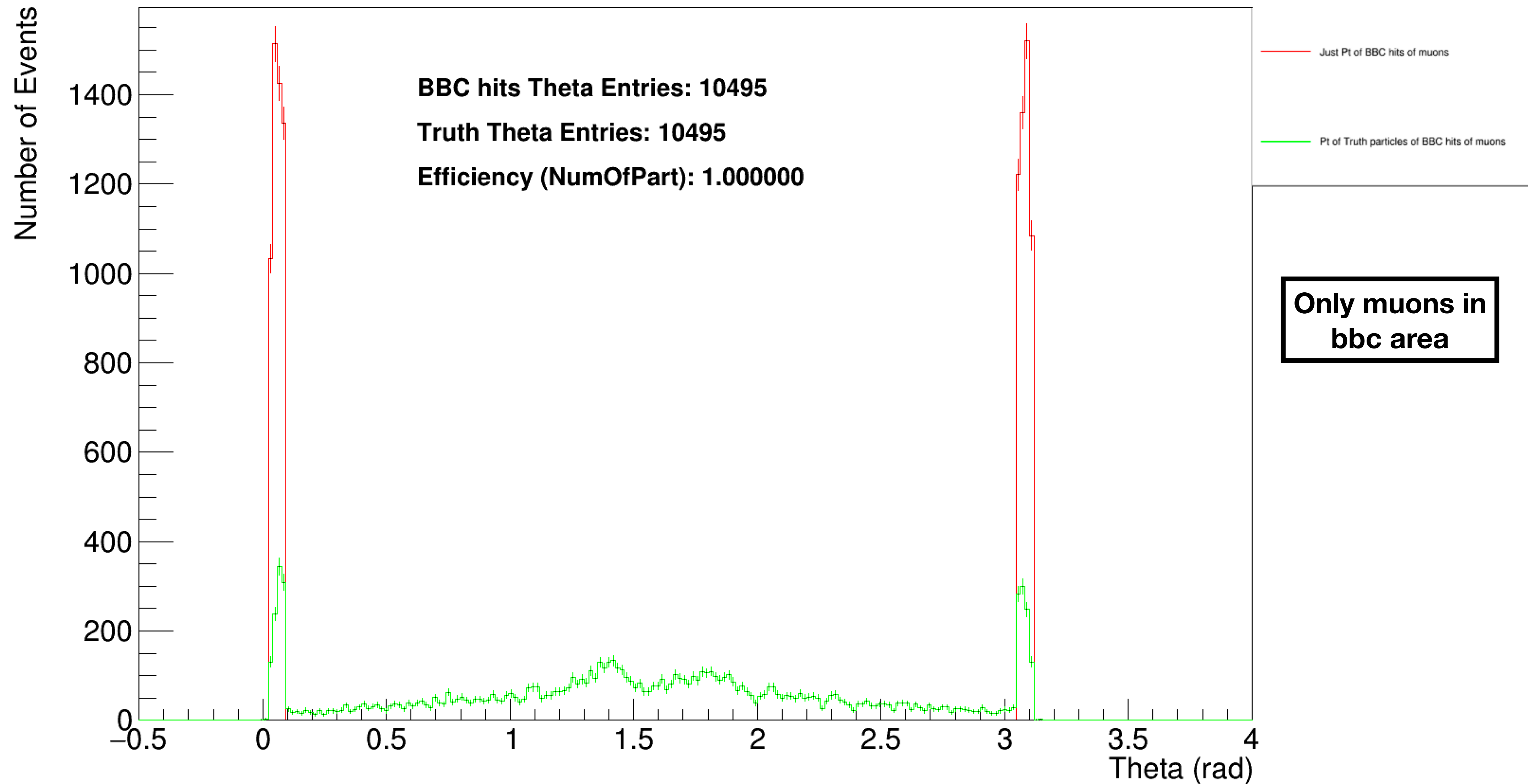
J/Psi 500k event, Theta (θ)

Comparison between MC and Truth particles of BBC hits

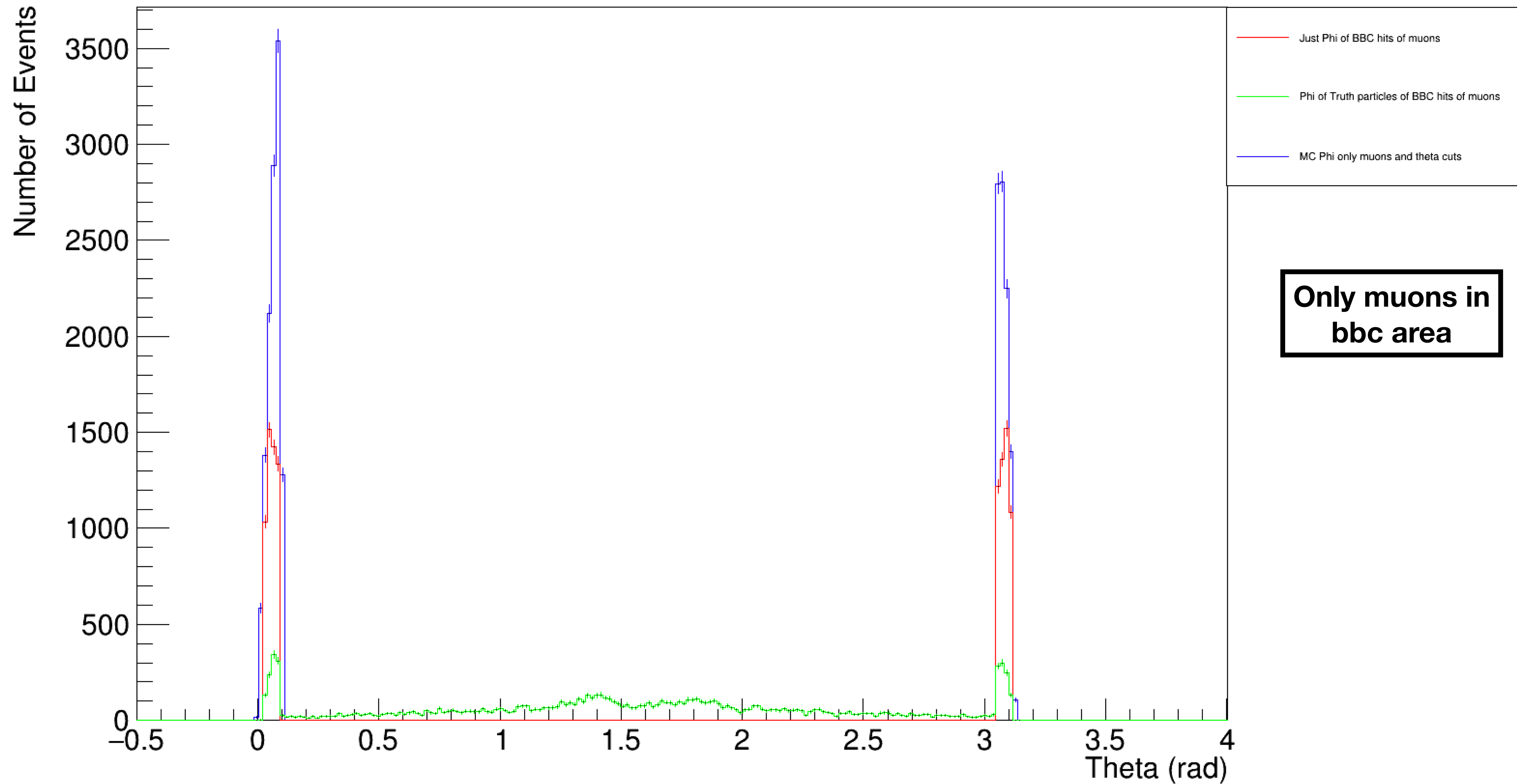


J/Psi 500k event, Theta (θ)

Comparison between BBC hits and Truth particles of BBC hits

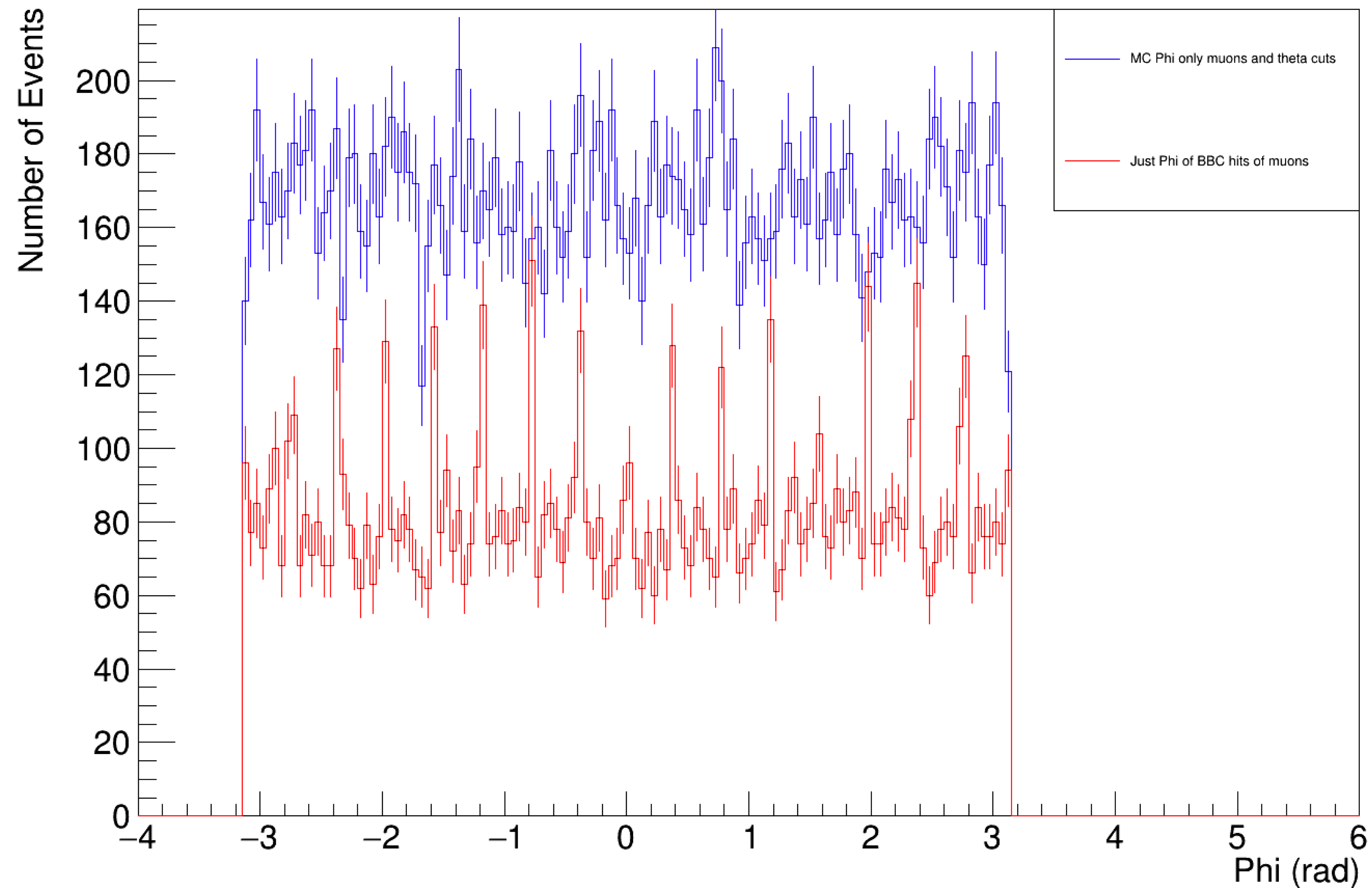


J/Psi 500k event, Theta (θ) all together



J/Psi 500k event, Phi (ϕ)

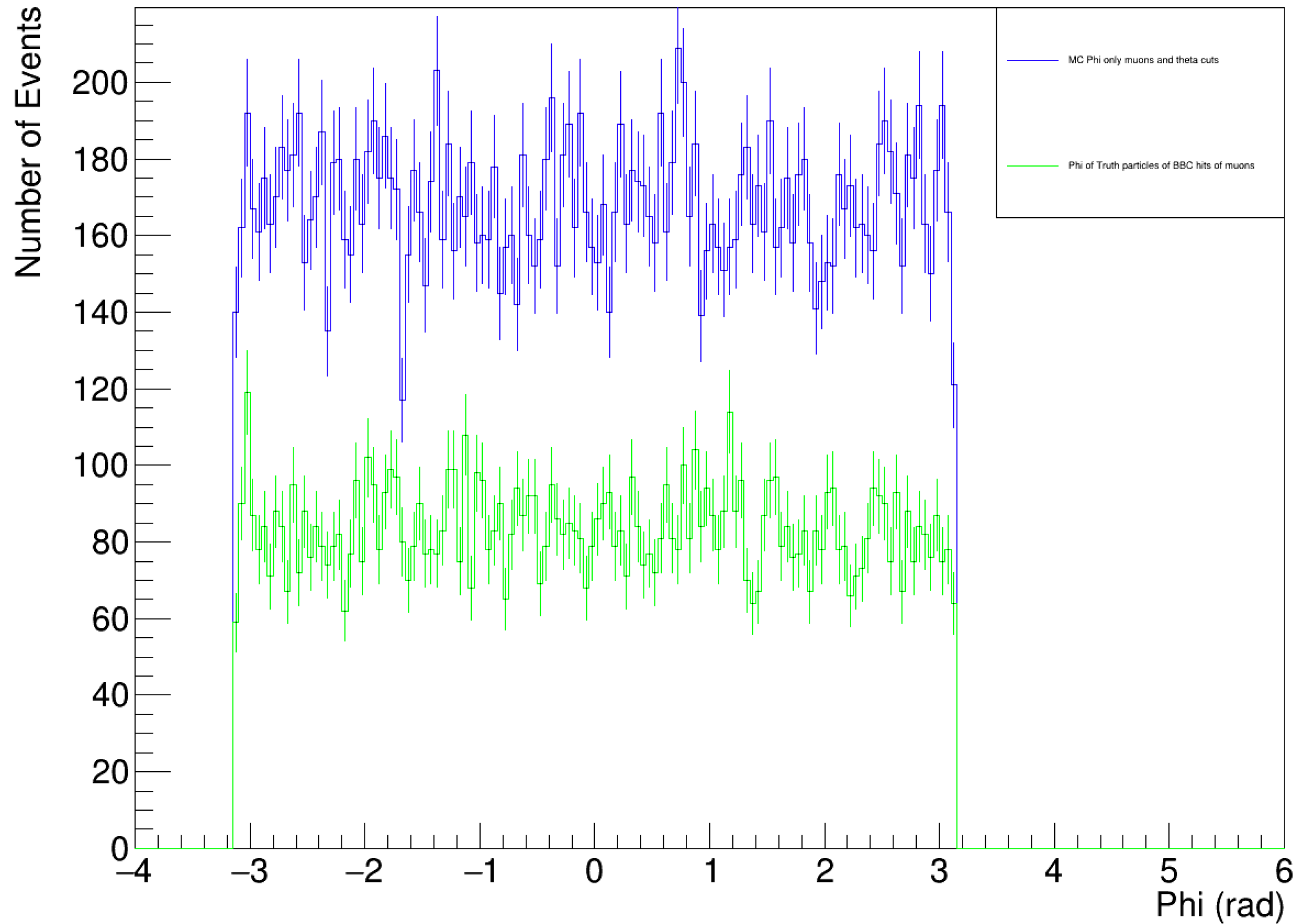
Comparison between MC and BBC hits



**Only muons in
bbc area**

J/Psi 500k event, Phi (ϕ)

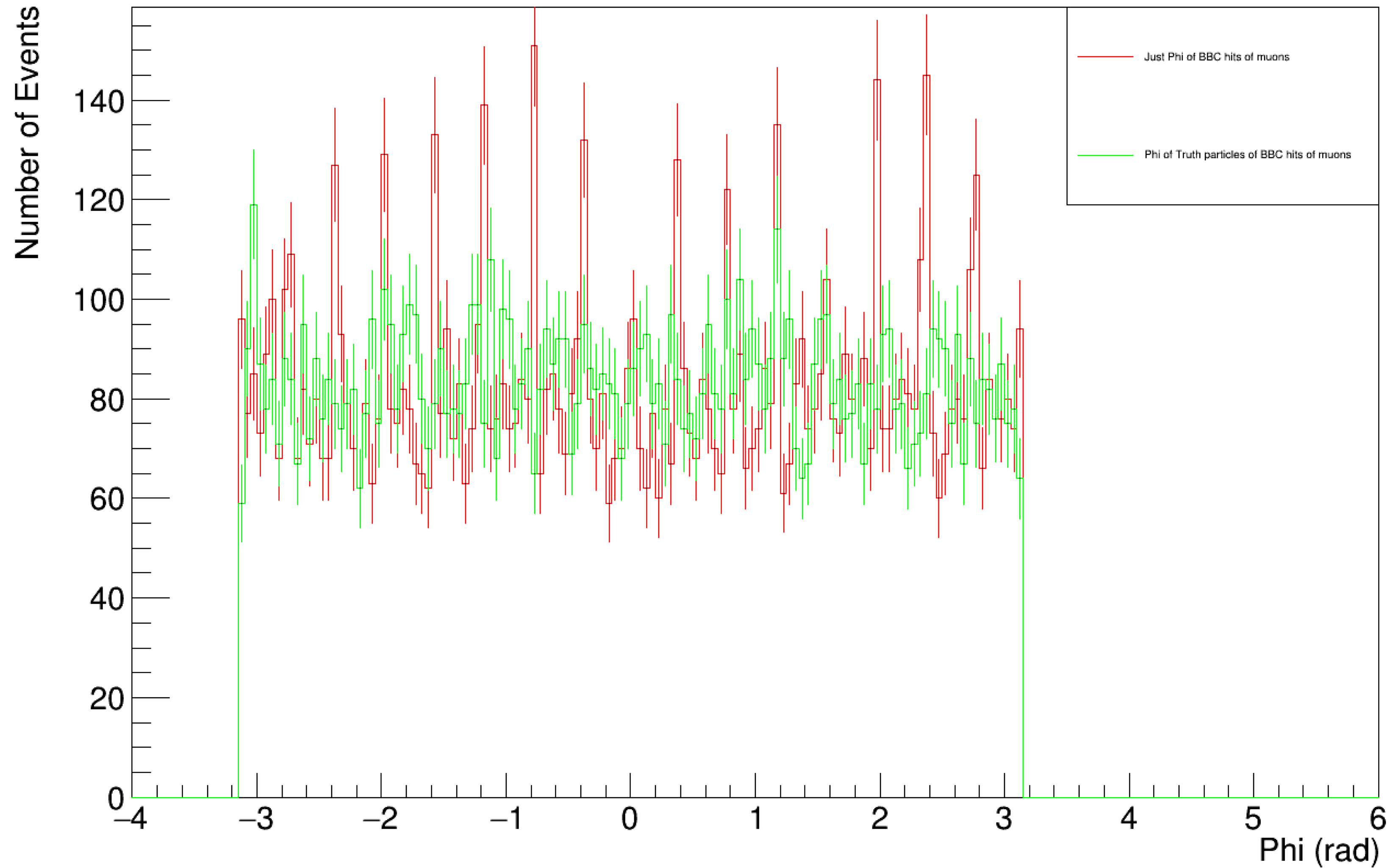
Comparison between MC and Truth particles of BBC hits



Only muons in
bbc area

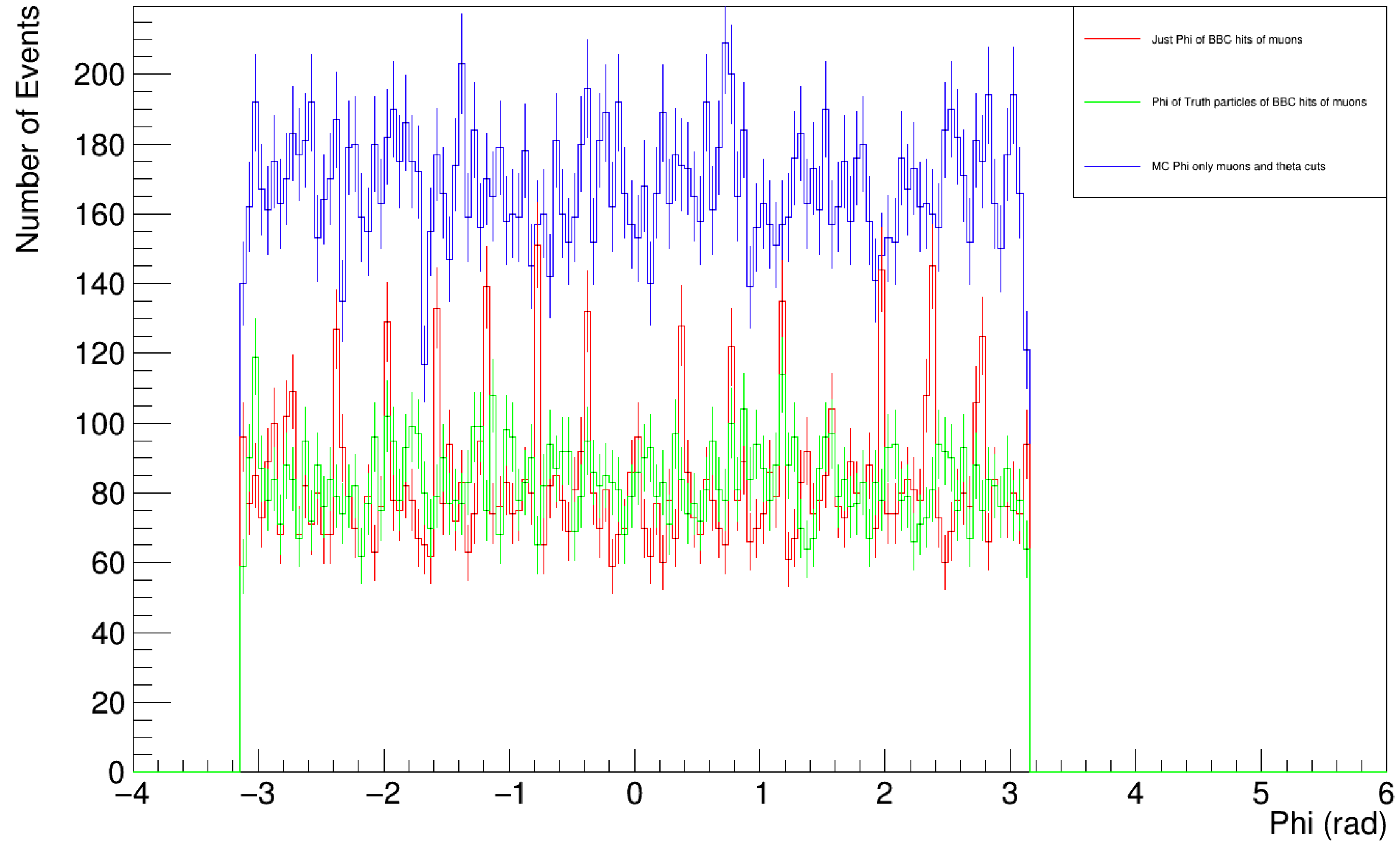
J/Psi 500k event, Phi (ϕ)

Comparison between BBC hits and Truth particles of BBC hits

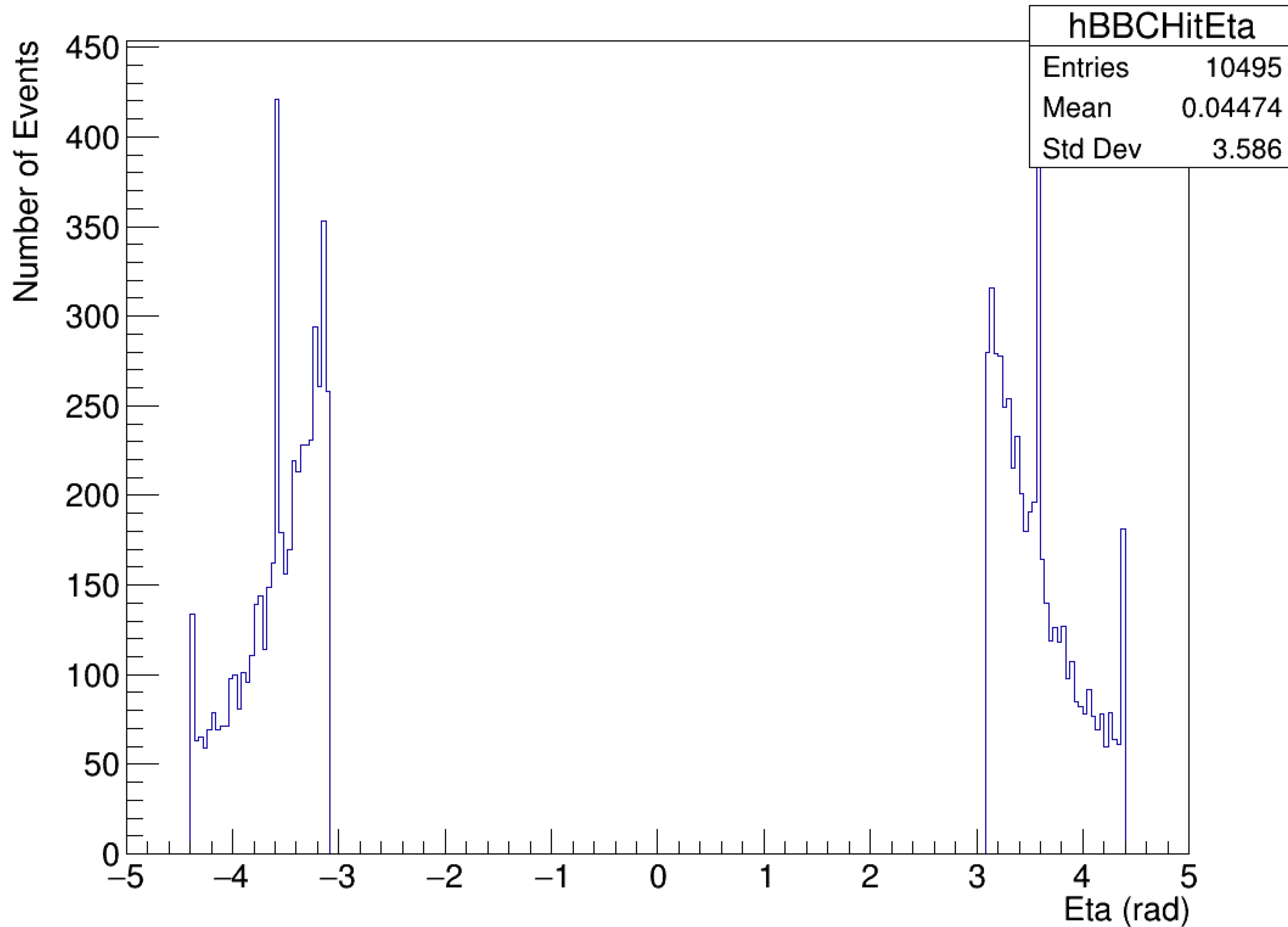


**Only muons in
bbc area**

J/Psi 500k event, Phi (ϕ) all together

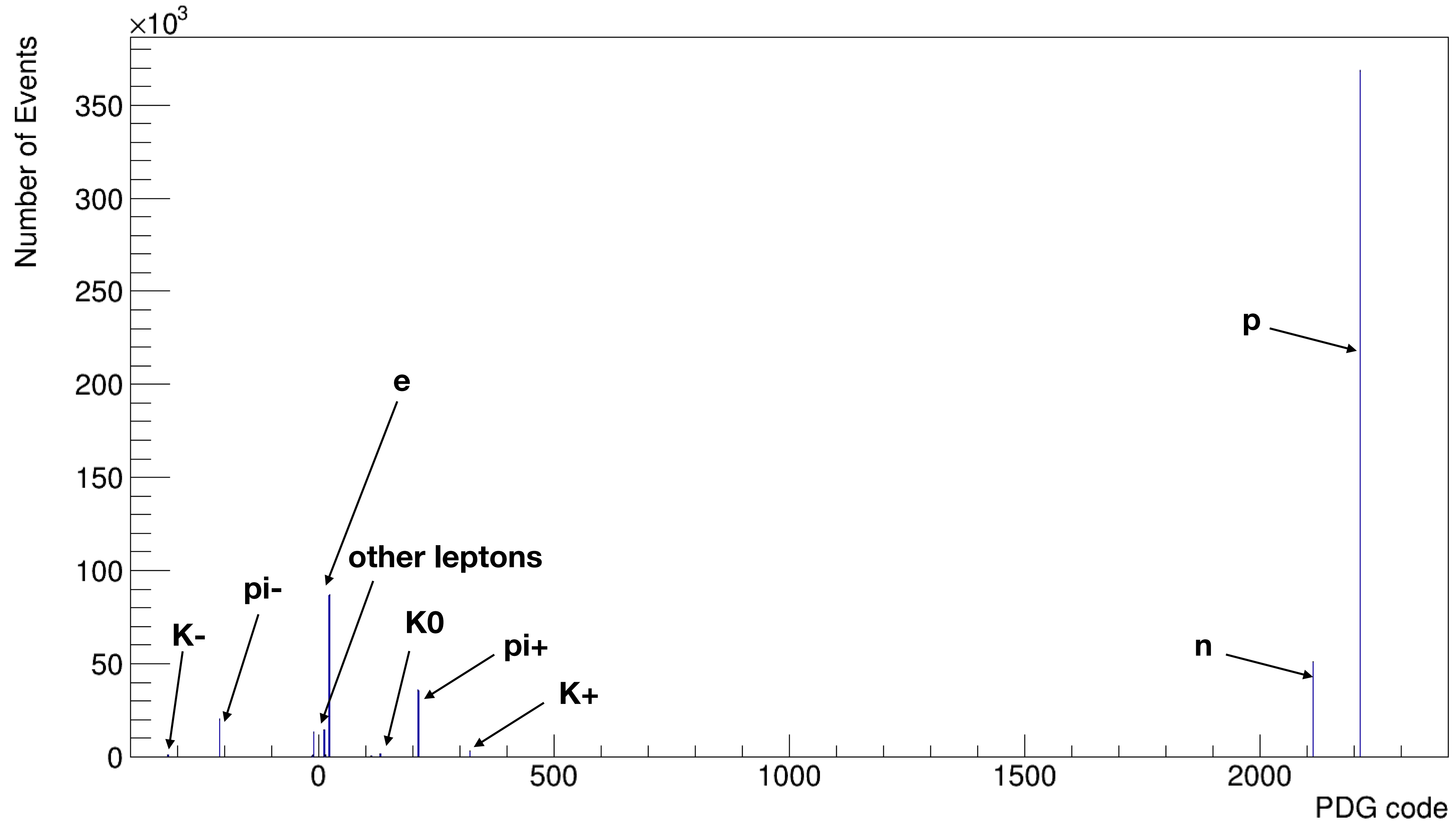


J/Psi 500k event, Pseudorapidity (η)



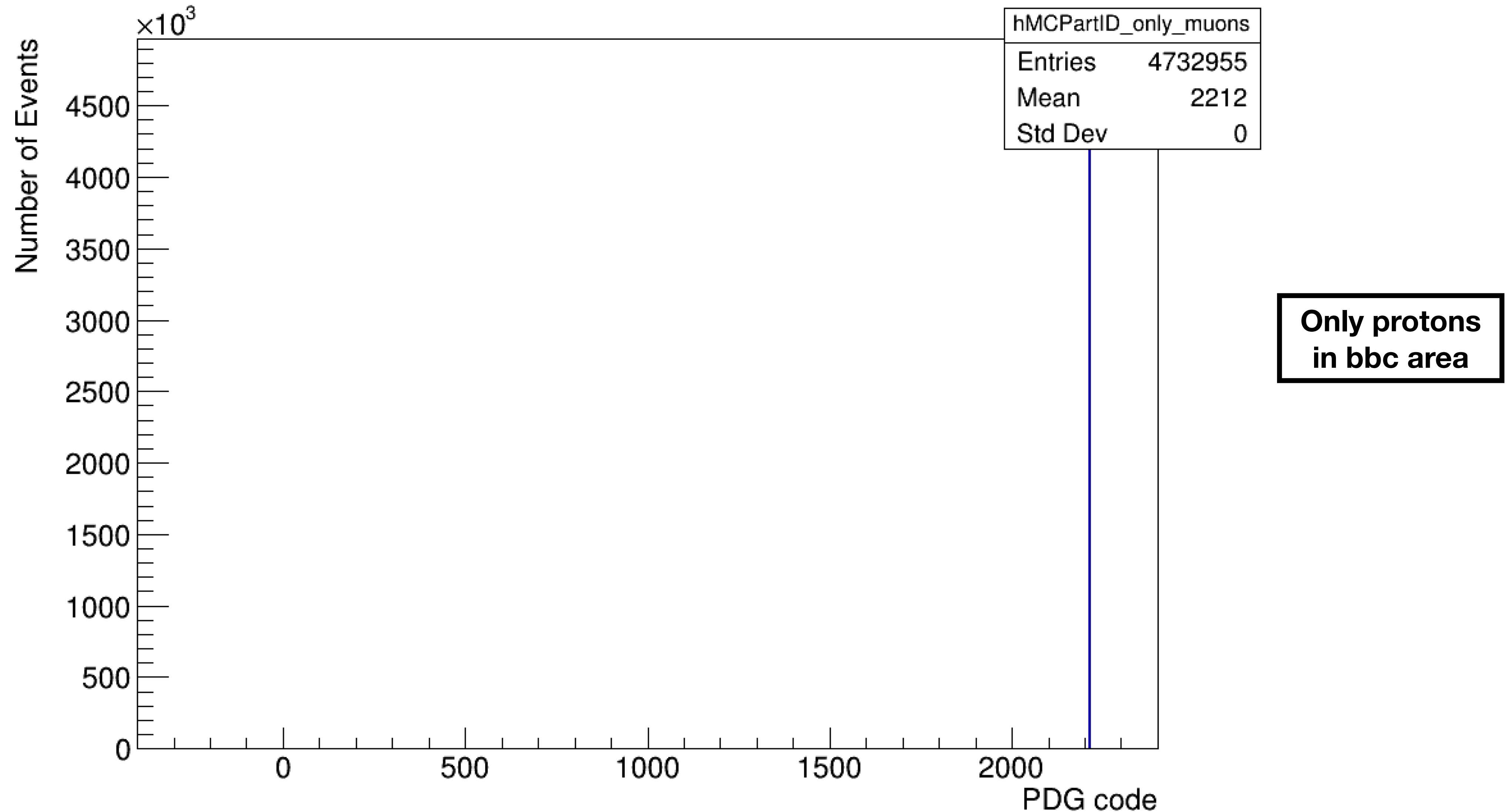
**Only muons in
bbc area**

Soft QCD 500k event, Produced particles



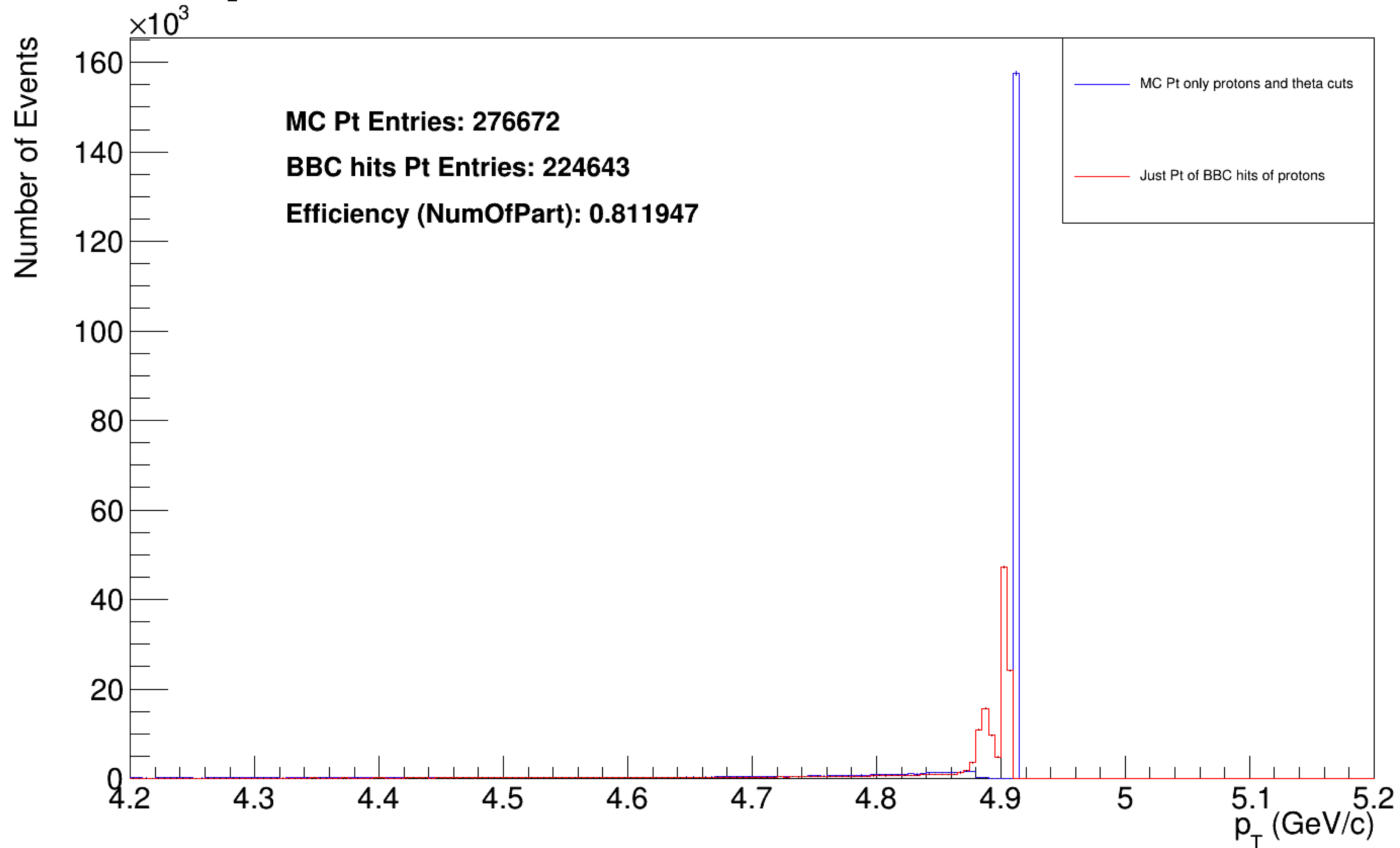
All particles
born in all
directions

Soft QCD 500k event, MC protons reached BBC



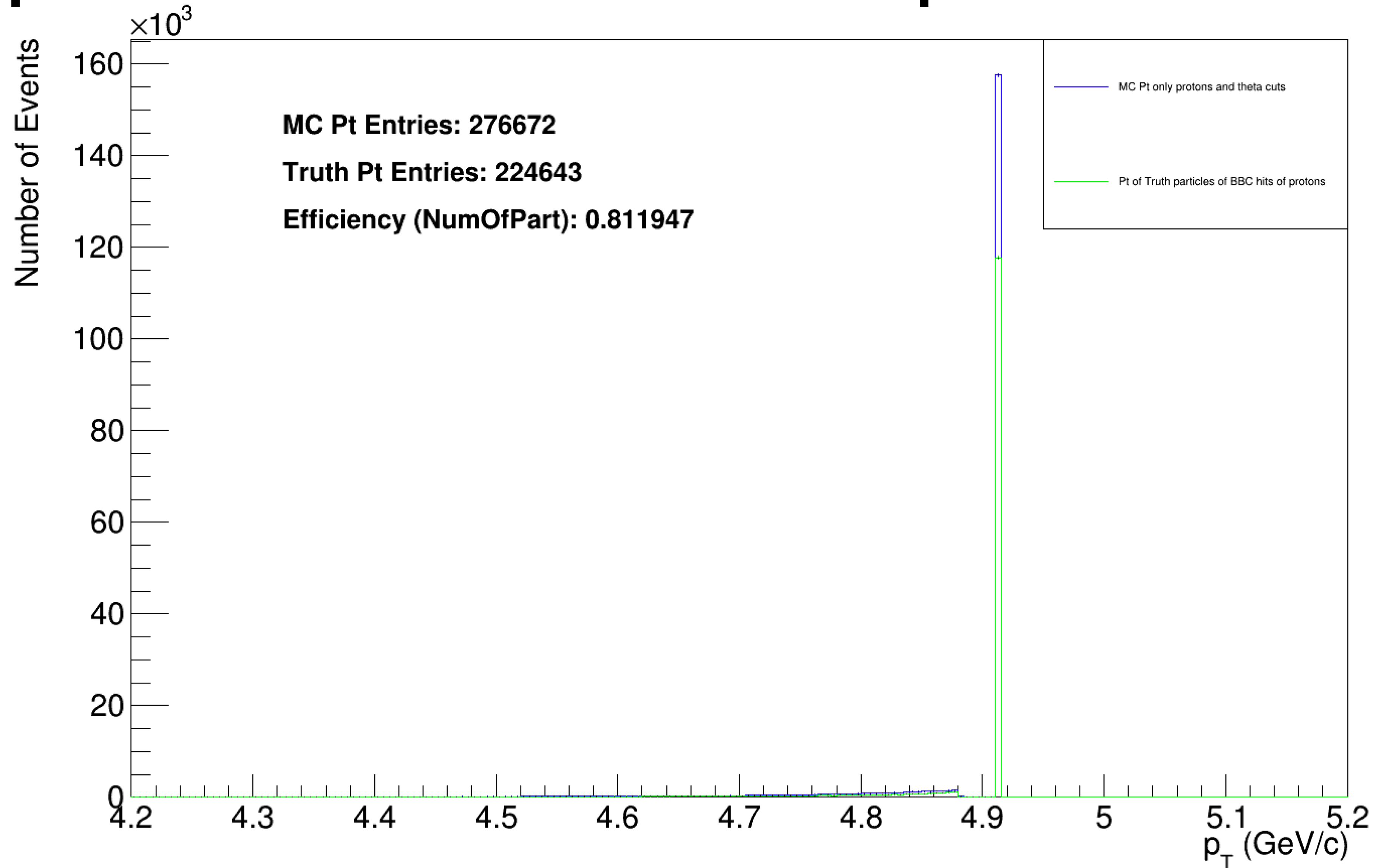
Soft QCD 500k event, Pt

Comparison between MC and BBC hits



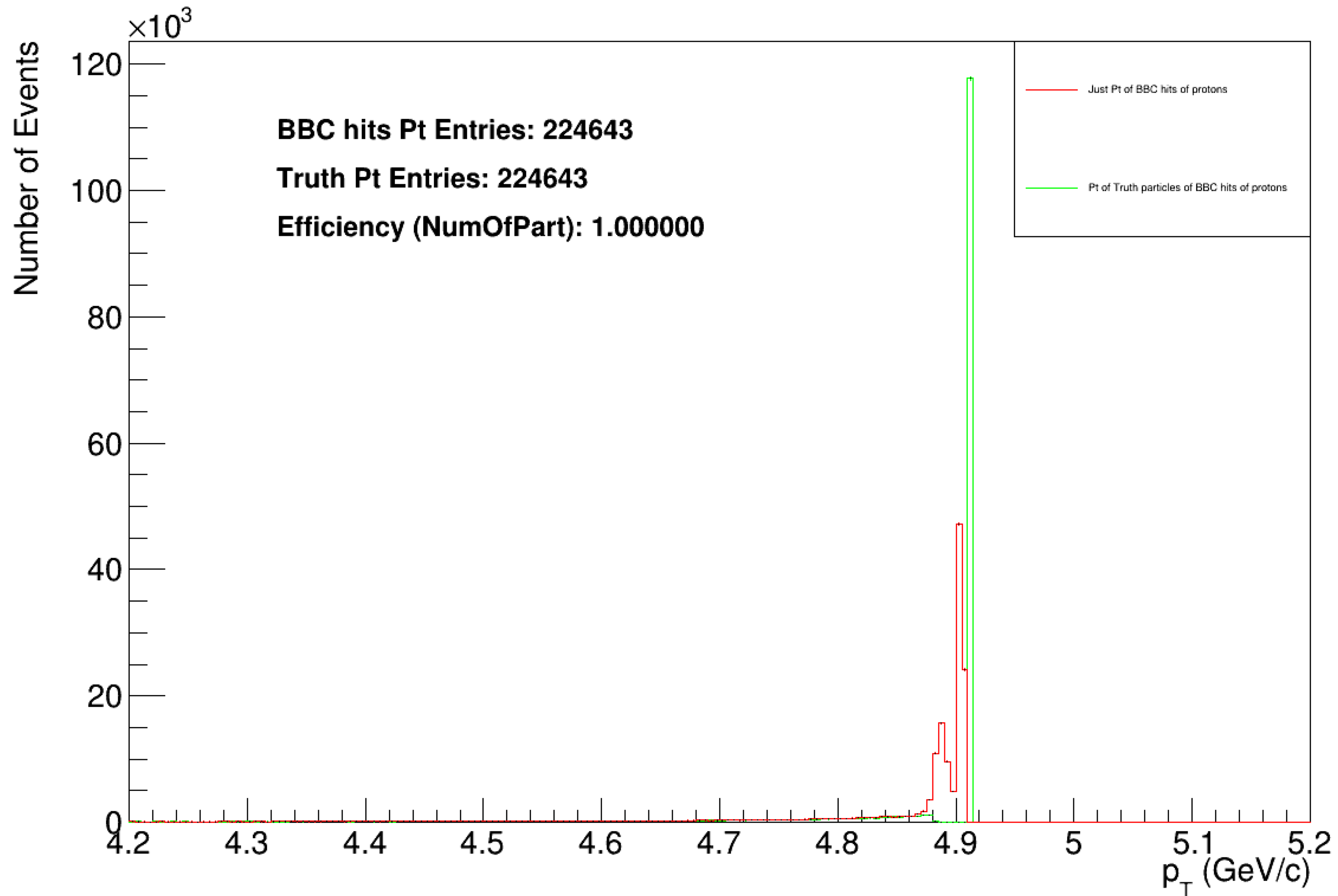
Soft QCD 500k event, Pt

Comparison between MC and Truth particles of BBC hits



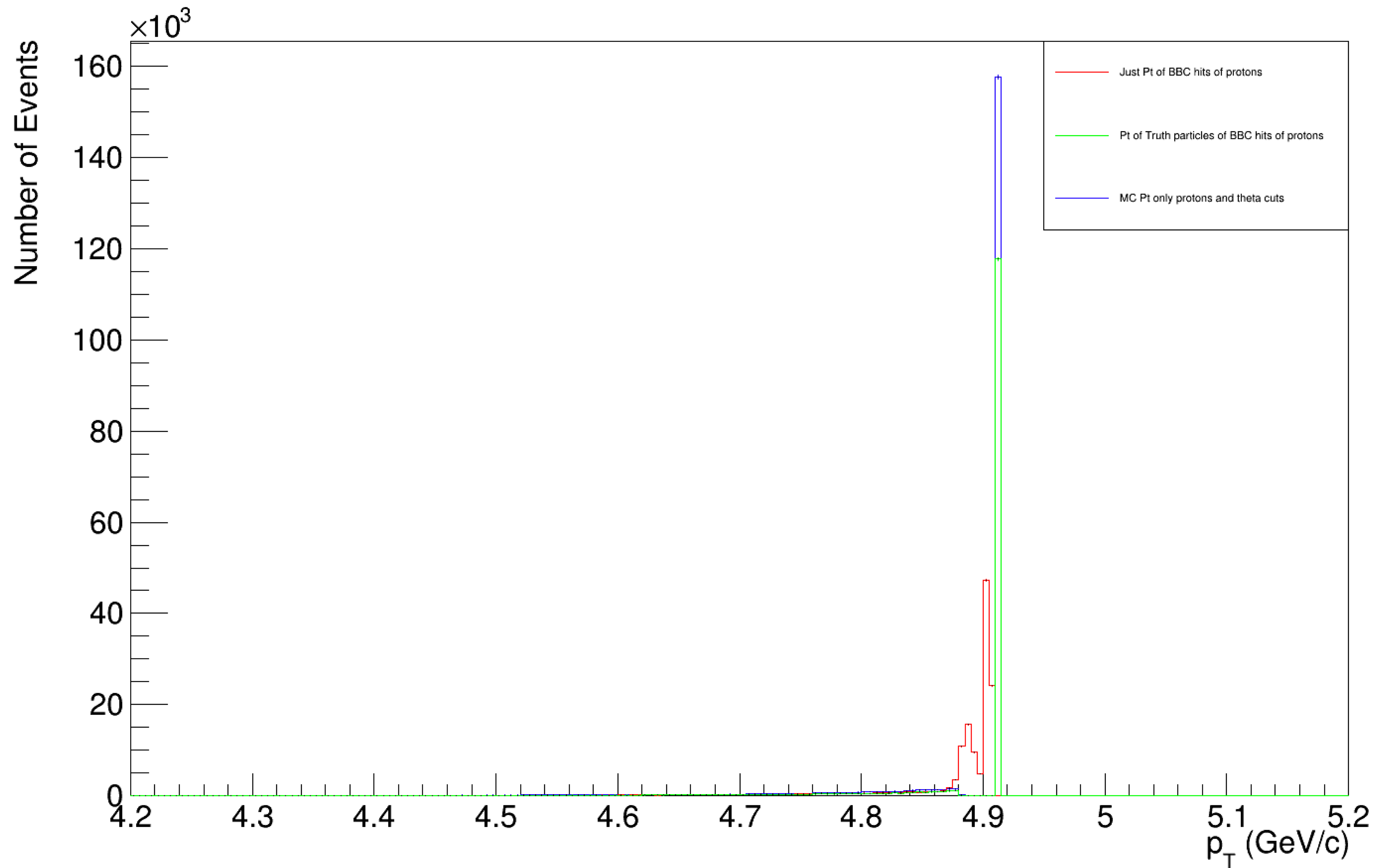
Soft QCD 500k event, Pt

Comparison between BBC hits and Truth particles of BBC hits



**Only protons
in bbc area**

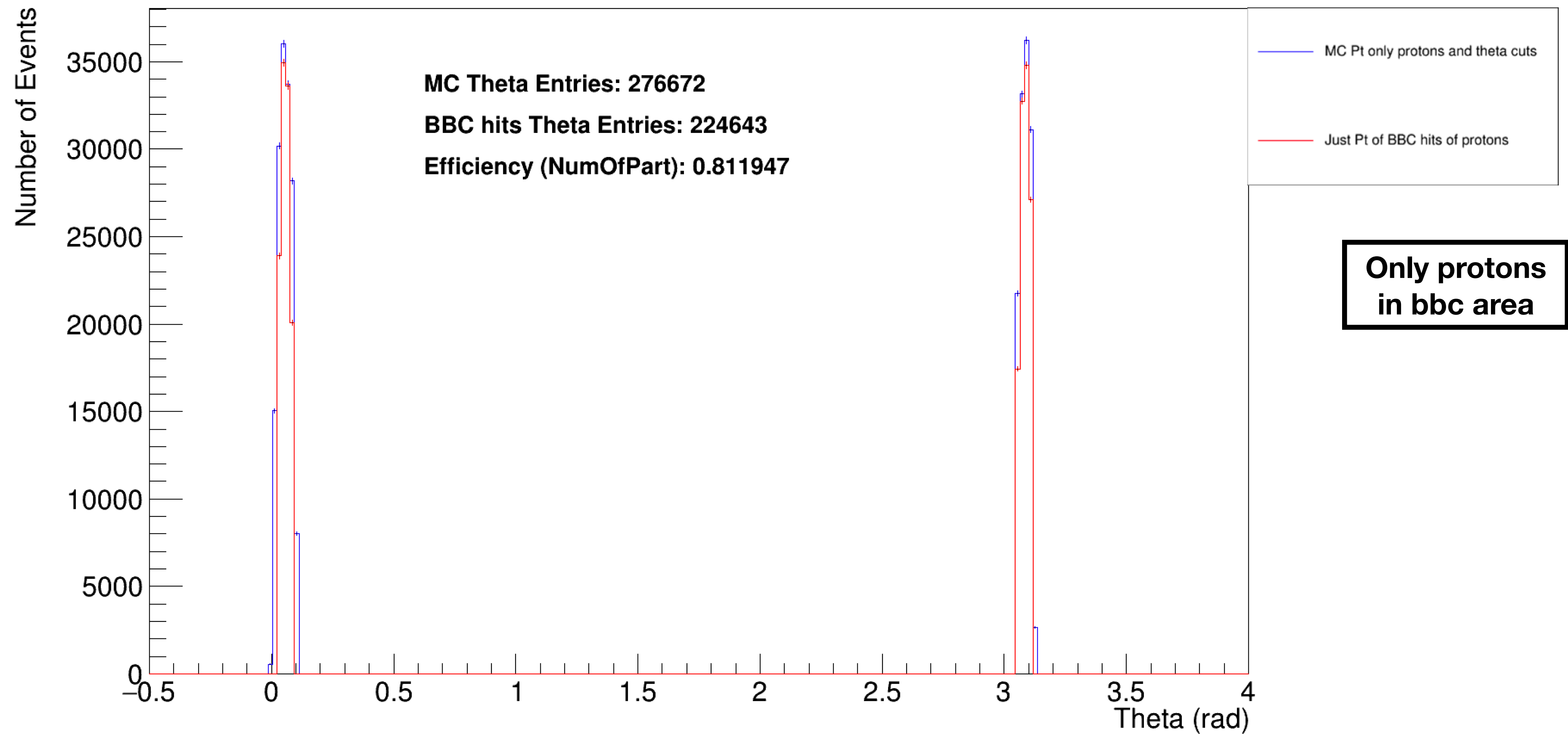
Soft QCD 500k event, Pt all together



**Only
protons in
bbc area**

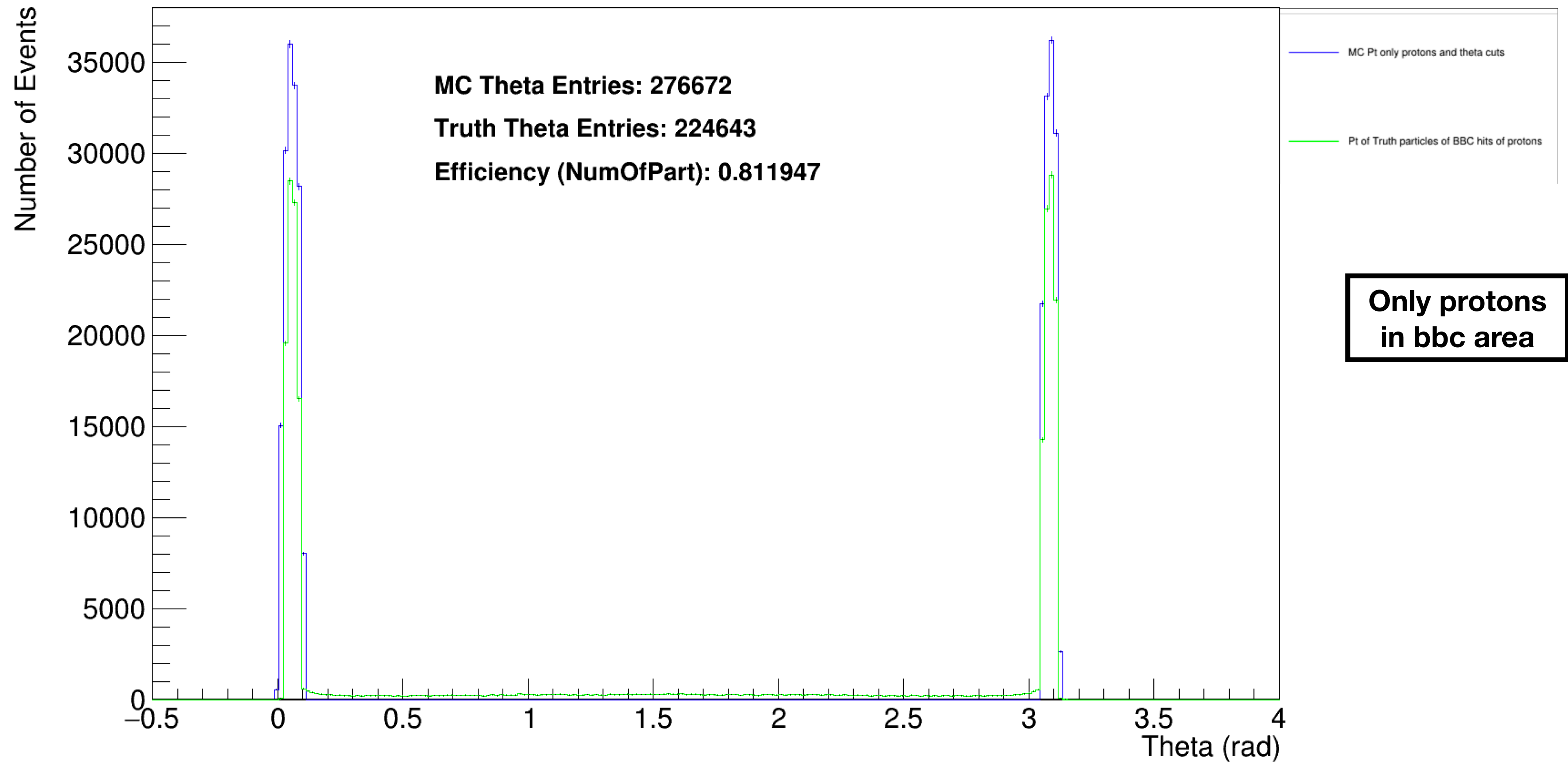
Soft QCD 500k event, Theta (θ)

Comparison between MC and BBC hits



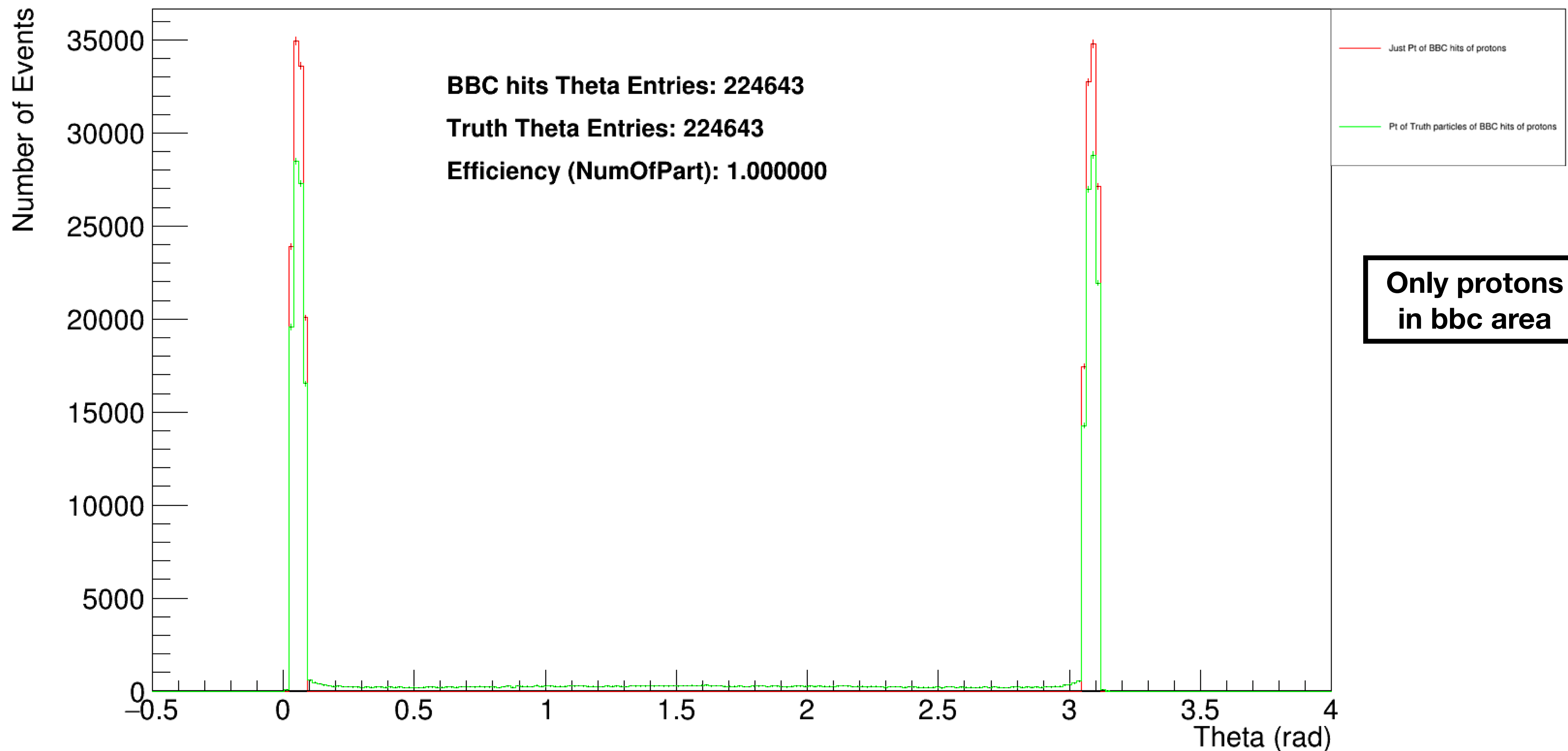
Soft QCD 500k event, Theta (θ)

Comparison between MC and Truth particles of BBC hits

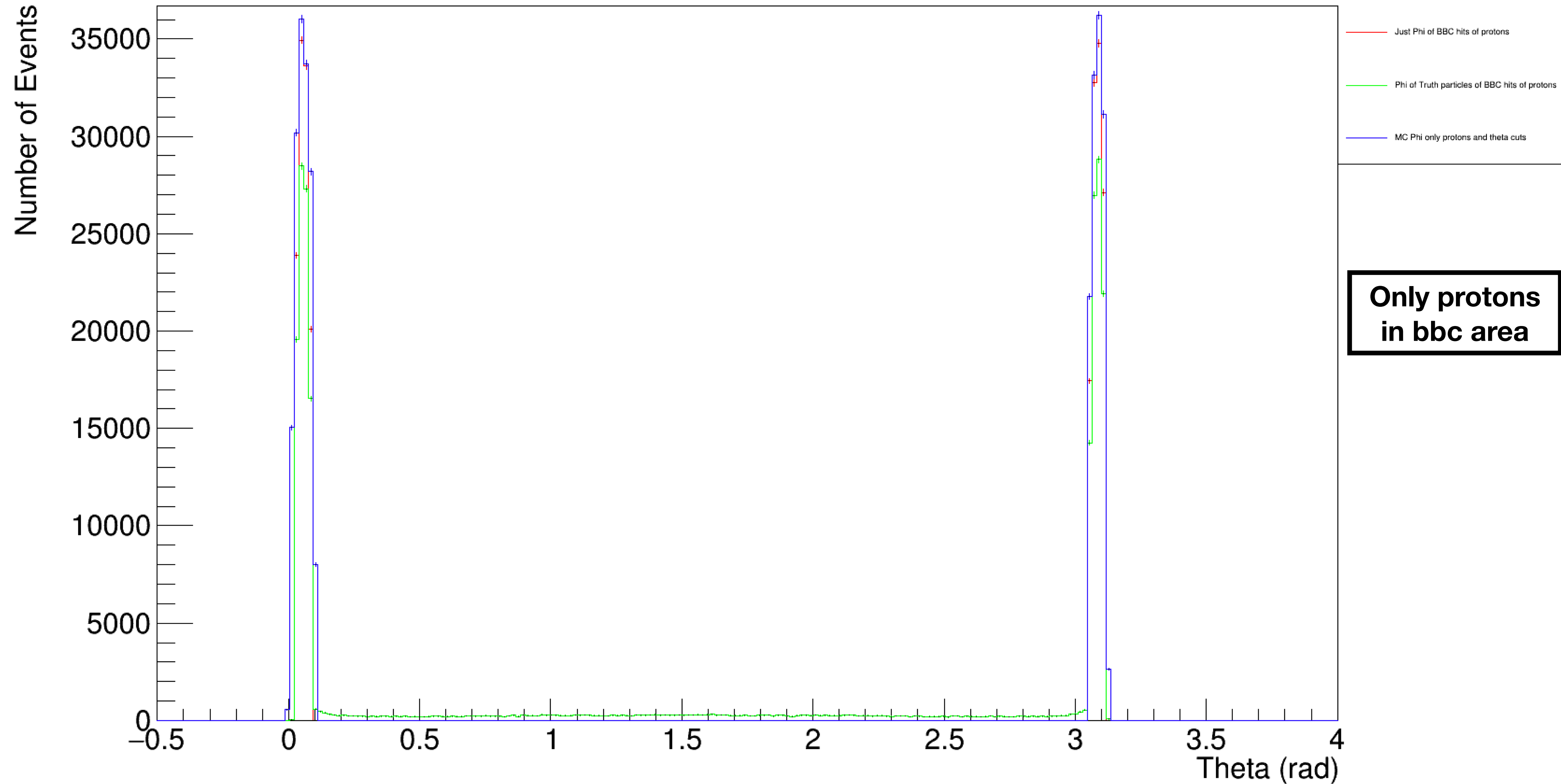


Soft QCD 500k event, Theta (θ)

Comparison between BBC hits and Truth particles of BBC hits

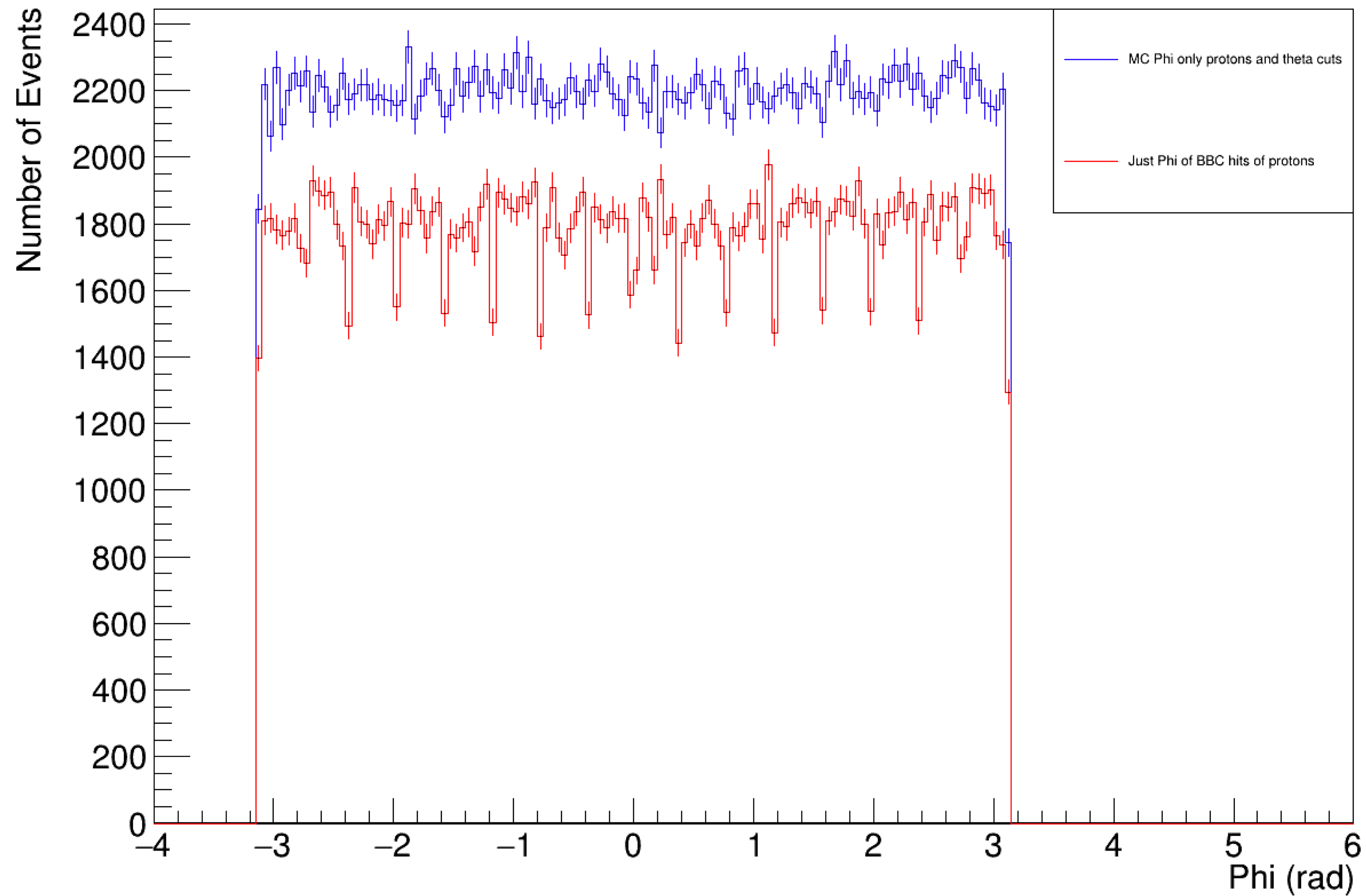


Soft QCD 500k event, Theta (θ) all together



Soft QCD 500k event, Phi (ϕ)

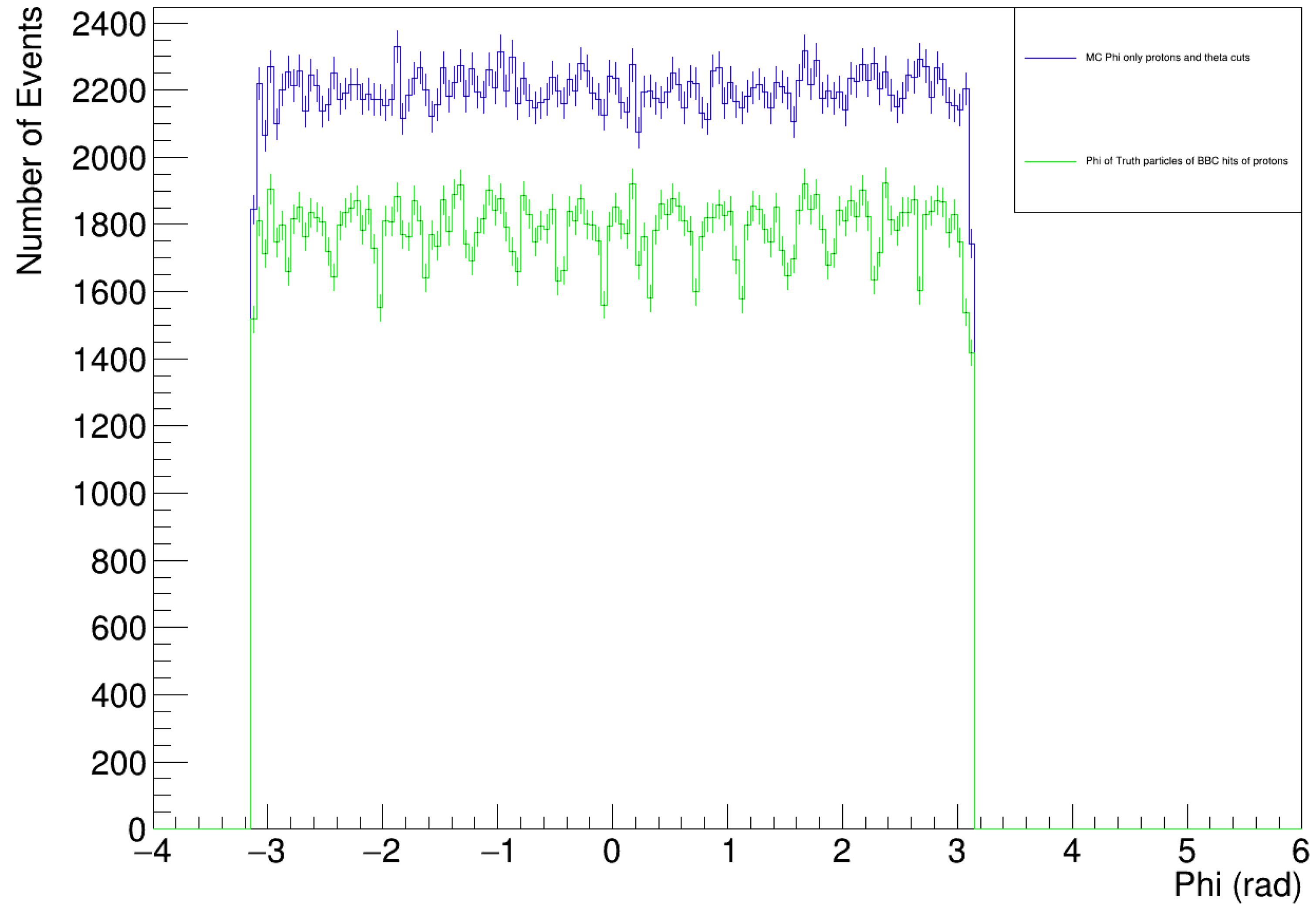
Comparison between MC and BBC hits



Only protons
in bbc area

Soft QCD 500k event, Phi (ϕ)

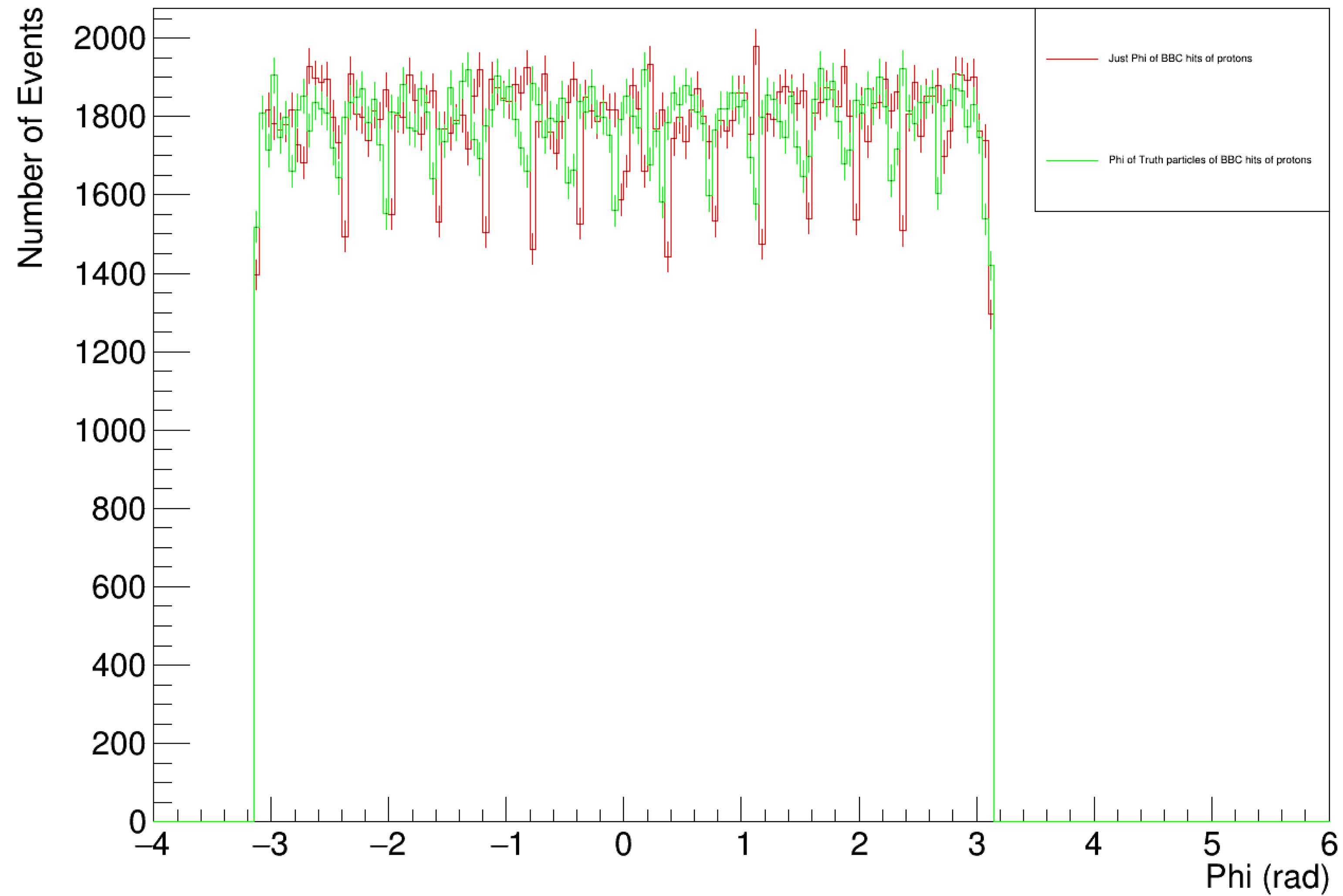
Comparison between MC and Truth particles of BBC hits



**Only protons
in bbc area**

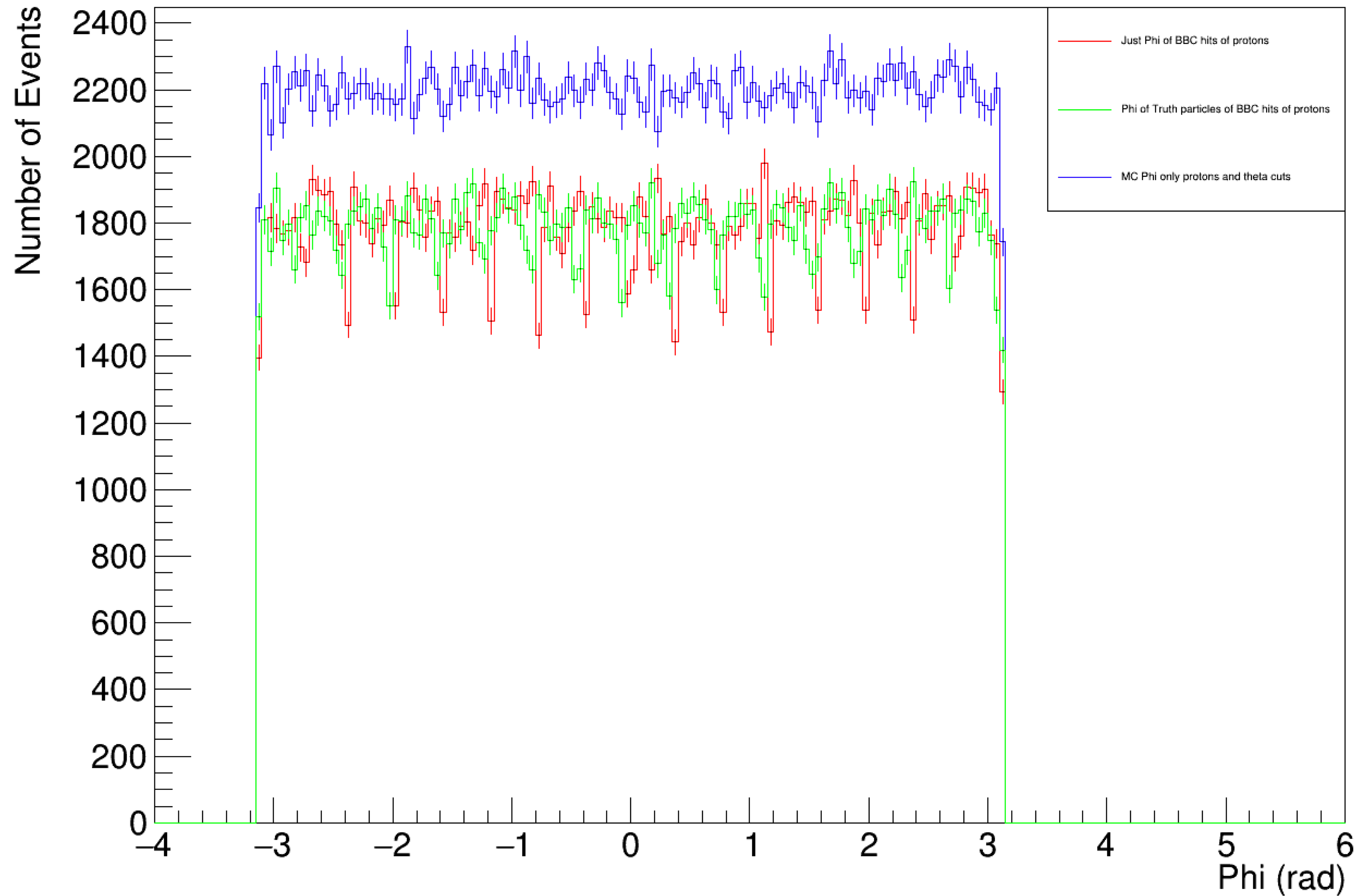
Soft QCD 500k event, Phi (ϕ)

Comparison between BBC hits and Truth particles of BBC hits

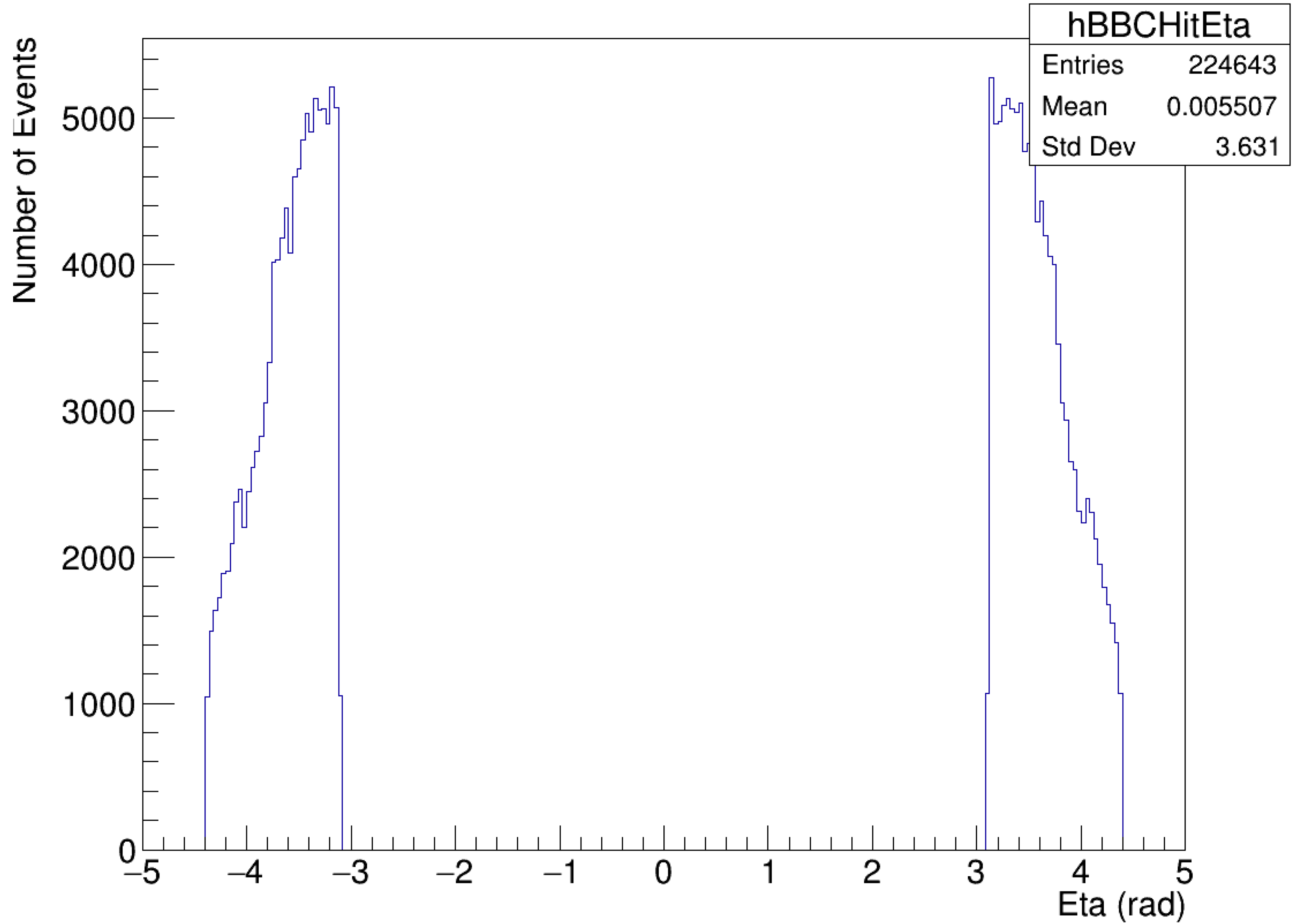


Only protons
in bbc area

Soft QCD 500k event, Phi (ϕ) all together



Soft QCD 500k event, Pseudorapidity (η)



Only protons
in bbc area

What's next

1. Перейти с катов по θ на каты по η (по отношению к bbc)
2. Посмотреть родительские частицы электронов и мюонов в процессах по J/Psi, и протонов в процессе по Soft QCD
3. Исследовать пик в распределении η для мюонов в процессах по J/Psi

Спасибо за внимание!