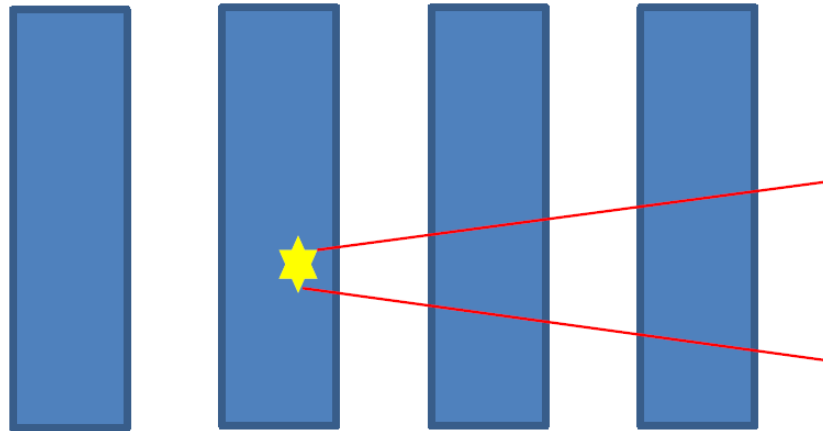


Neutron Detector Simulation

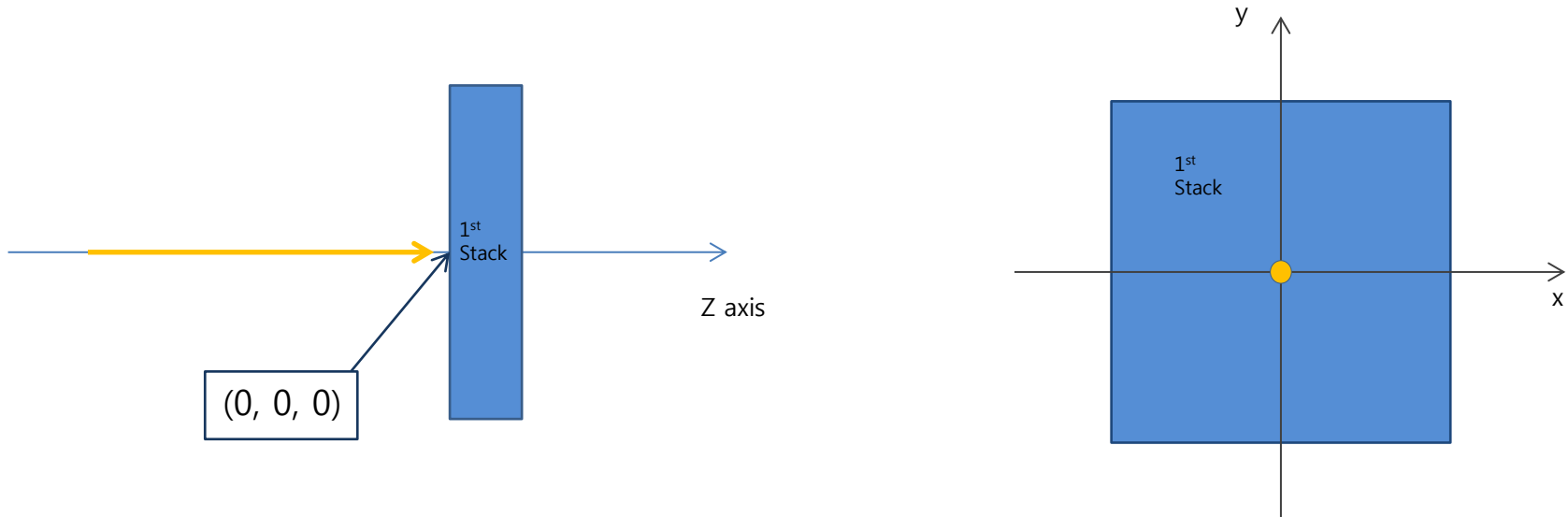
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Korea University
Nuclear Physics Lab.
BumGon Kim

Beam Conditions

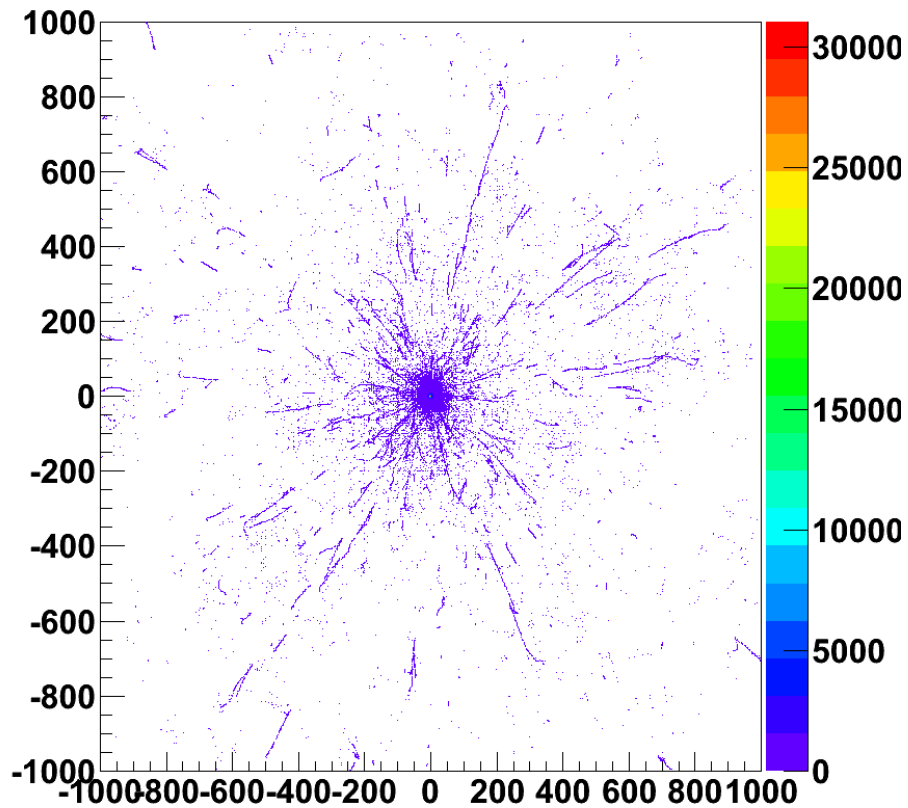
➤ Pinpoint Neutron Beam



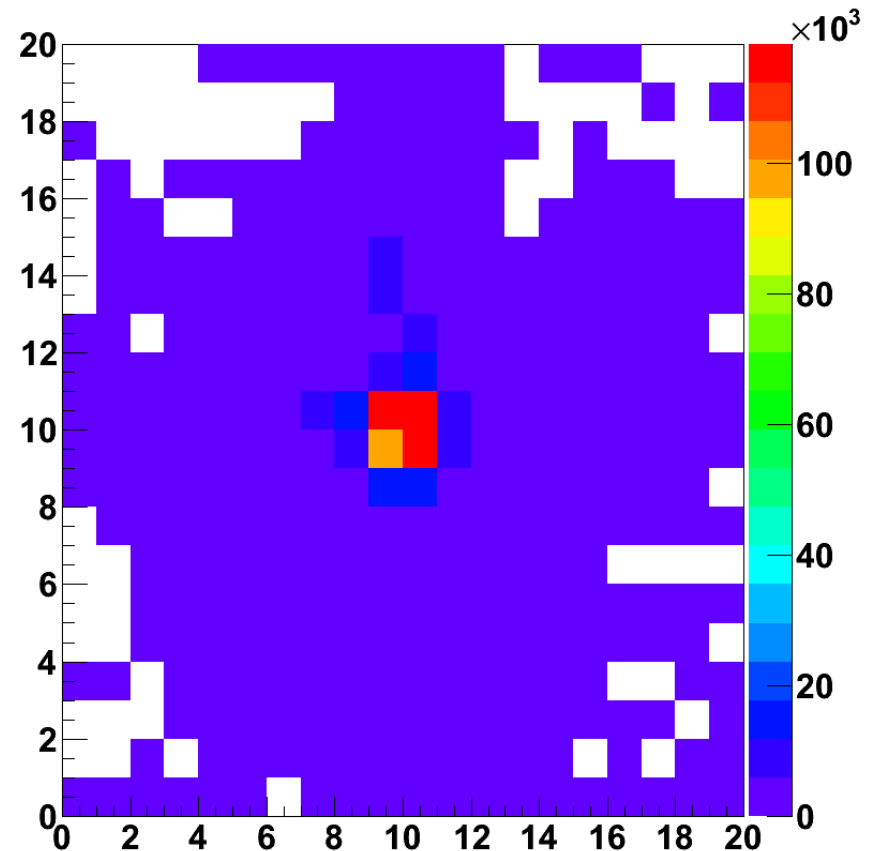
- Neutron Energy : 100 MeV
- GunPosition : $(0, 0, -15000 \text{ mm})$
- Momentum direction : $(0, 0, 1)$
- Threshold $\sim 0 \text{ MeV}$

Hits in 1st Stack (10000 Events)

XY – Position & Hits (Real Hit Positions)
(2000 mm × 2000 mm , 1000 × 1000 bins)

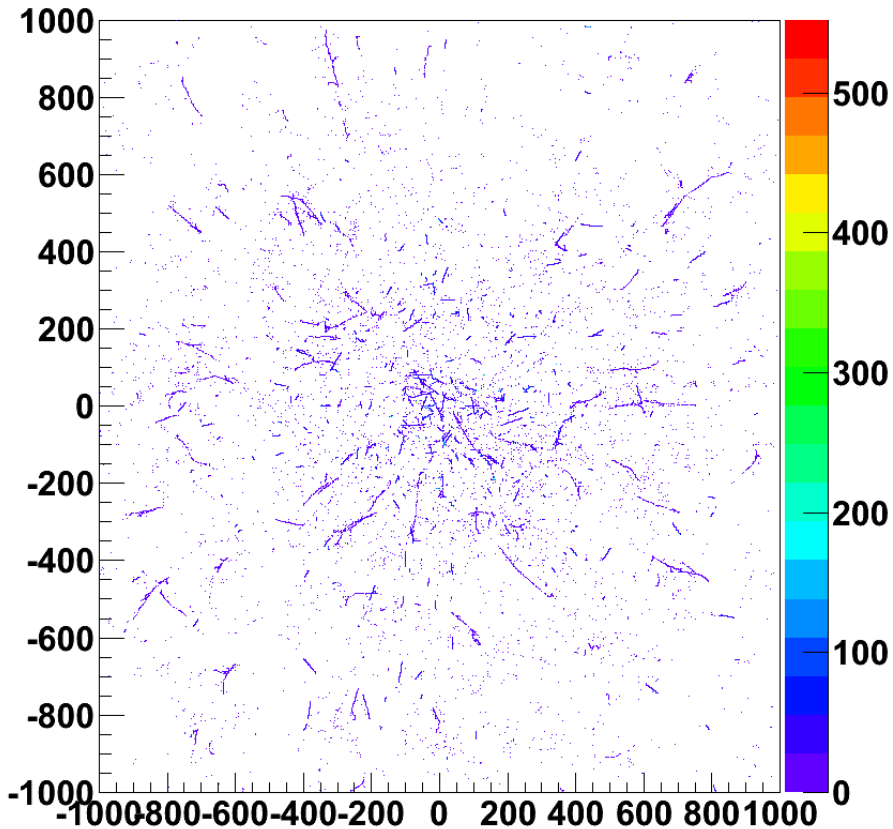


XY – BarNum & Hits (Detected Hit Positions)
(20 bars × 20 bars)

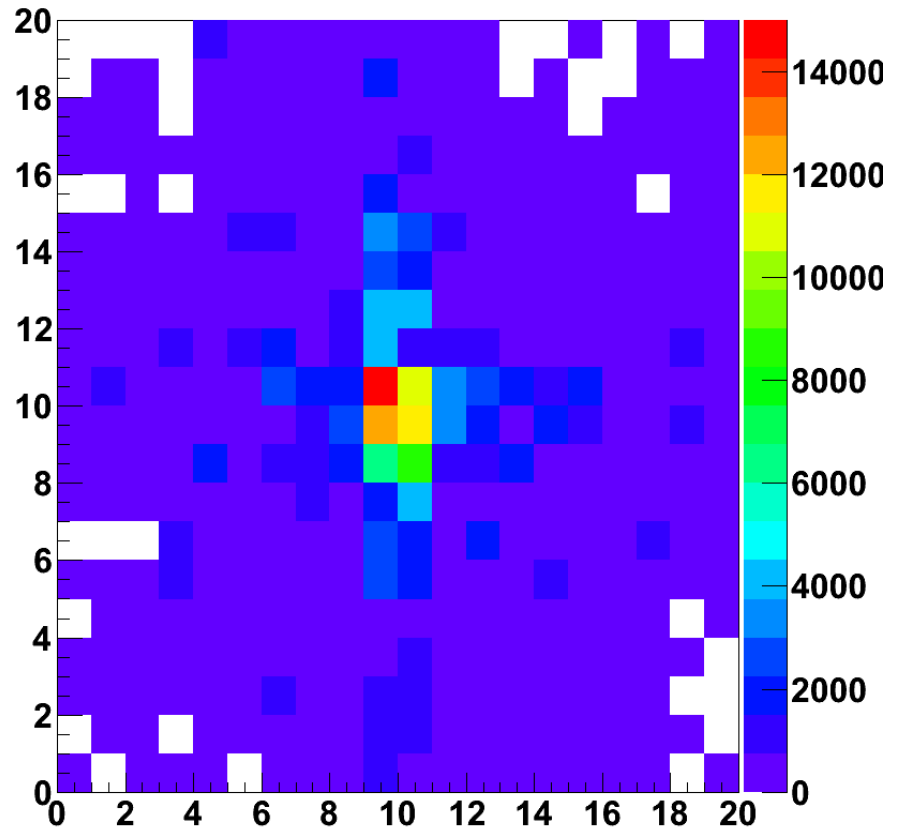


Hits in 2nd Stack (10000 Events)

XY – Position & Hits (Real Hit Positions)
(2000 mm × 2000 mm , 1000 × 1000 bins)

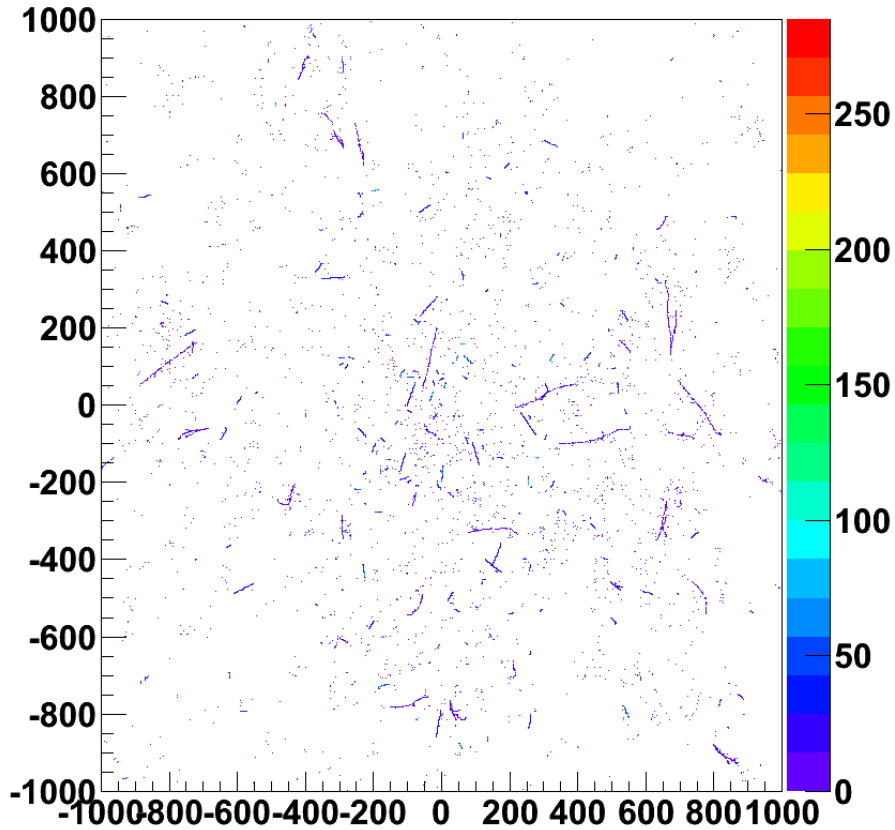


XY – BarNum & Hits (Detected Hit Positions)
(20 bars × 20 bars)

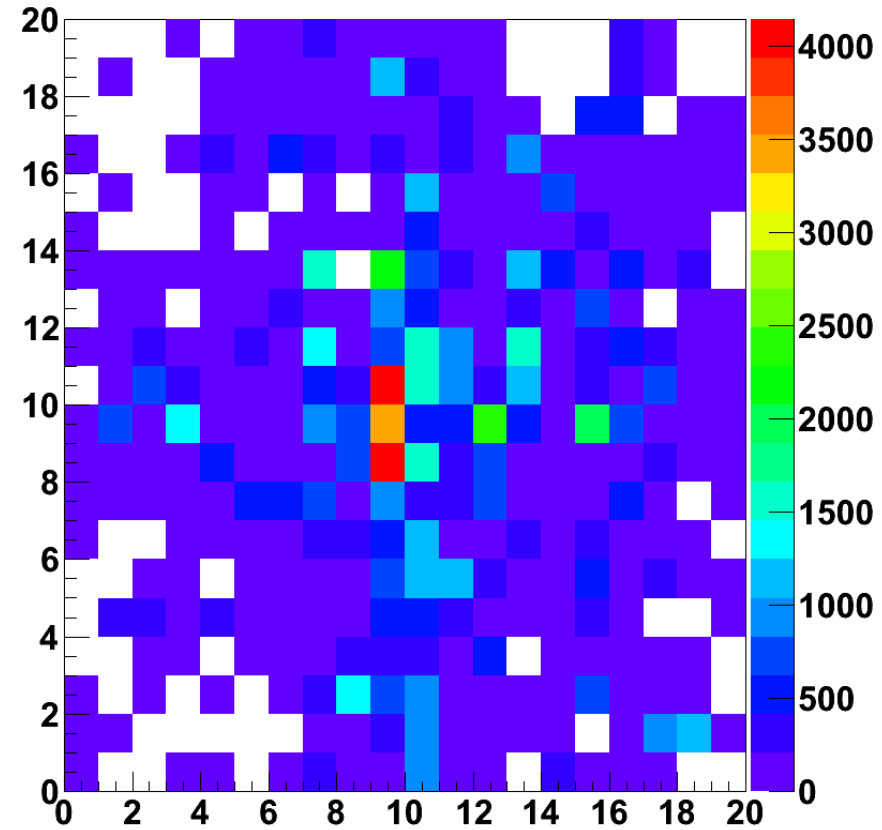


Hits in 3rd Stack (10000 Events)

XY – Position & Hits (Real Hit Positions)
(2000 mm × 2000 mm , 1000 × 1000 bins)

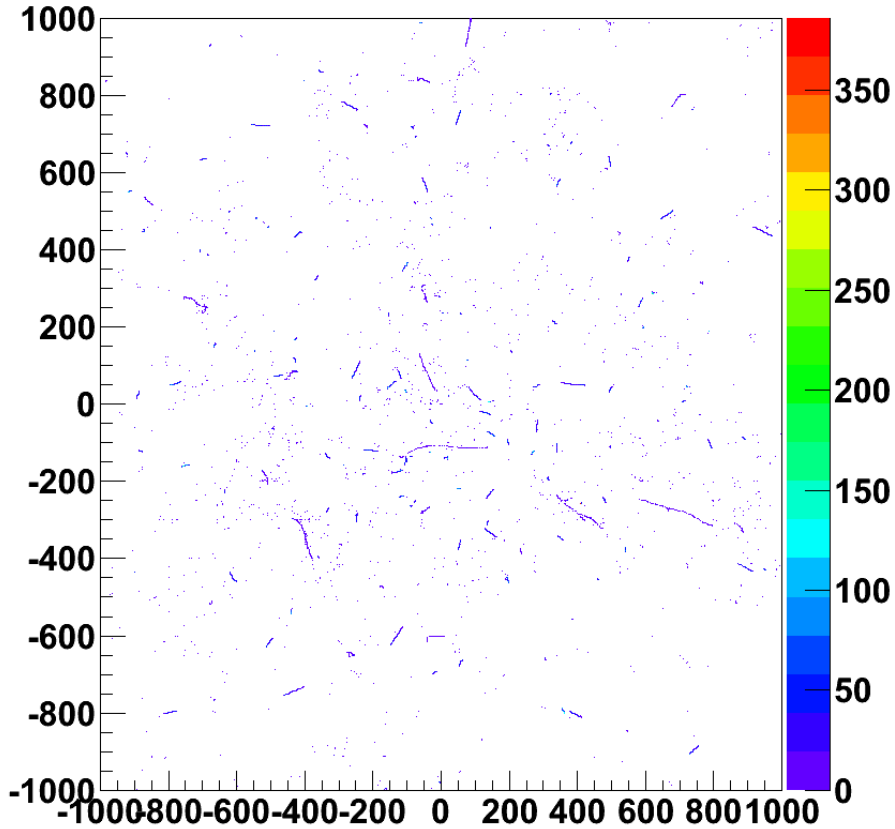


XY – BarNum & Hits (Detected Hit Positions)
(20 × 20)

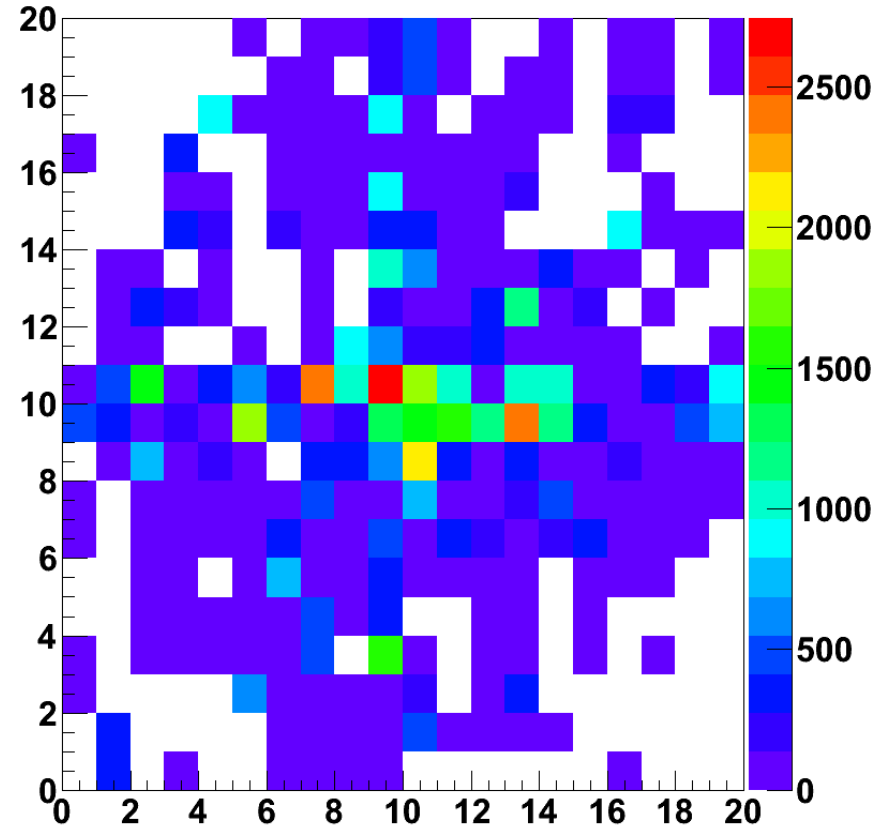


Hits in 4th Stack (10000 Events)

XY – Position & Hits (Real Hit Positions)
(2000 mm × 2000 mm , 1000 × 1000 bins)

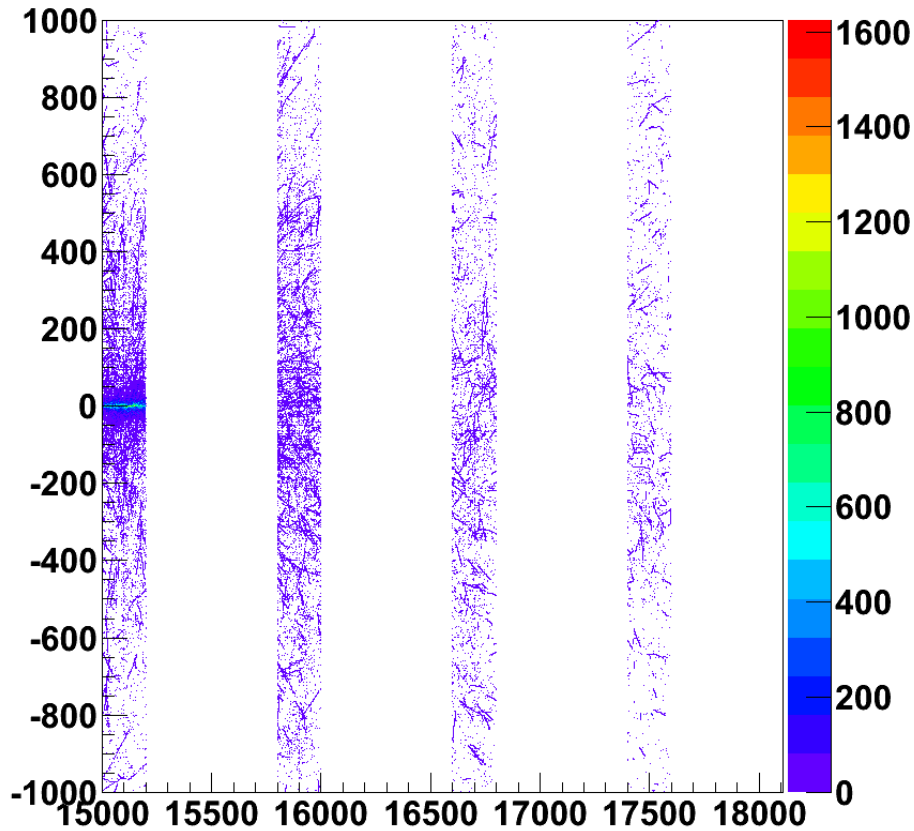


XY – BarNum & Hits (Detected Hit Positions)
(20 × 20)

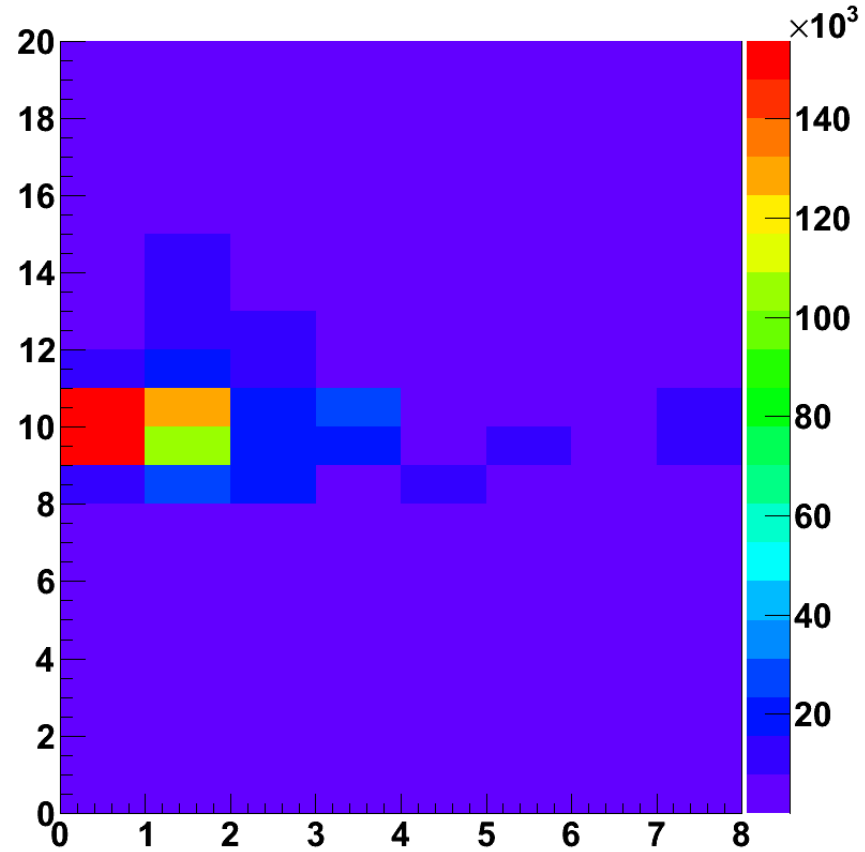


Hits in 1st ~ 4th Stack (10000 Events)

ZY – Position & Hits (Real Hit Positions)
(3110 mm × 2000 mm, 1600 × 1000 bins)

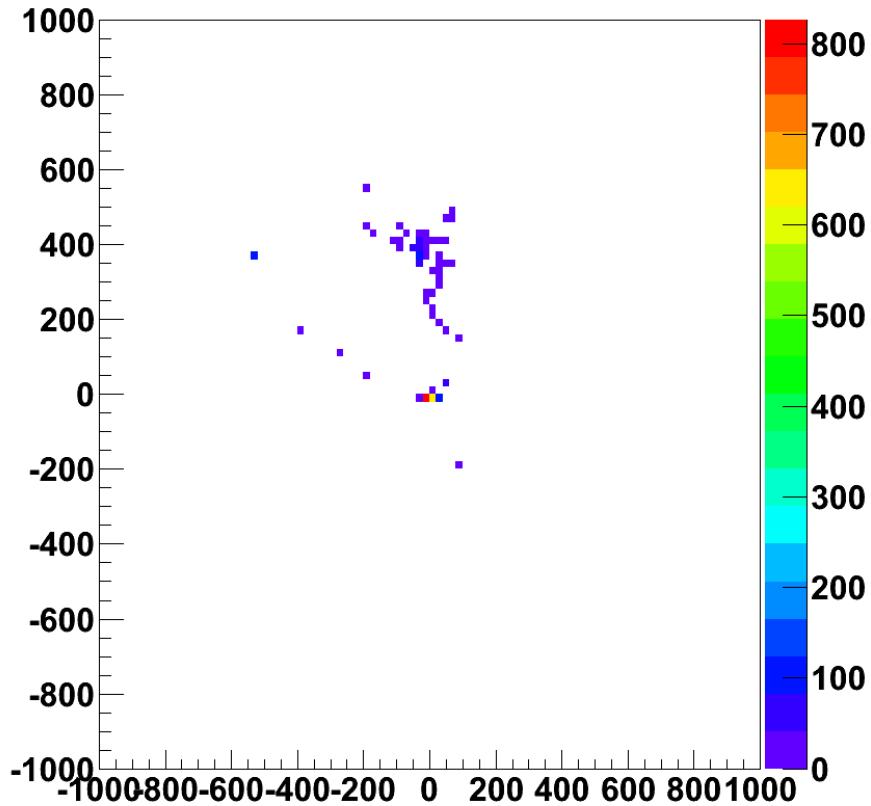


LayerNum - Bar & Hits (Detected Hit Positions)
(8 layerNum × 20 barNum)

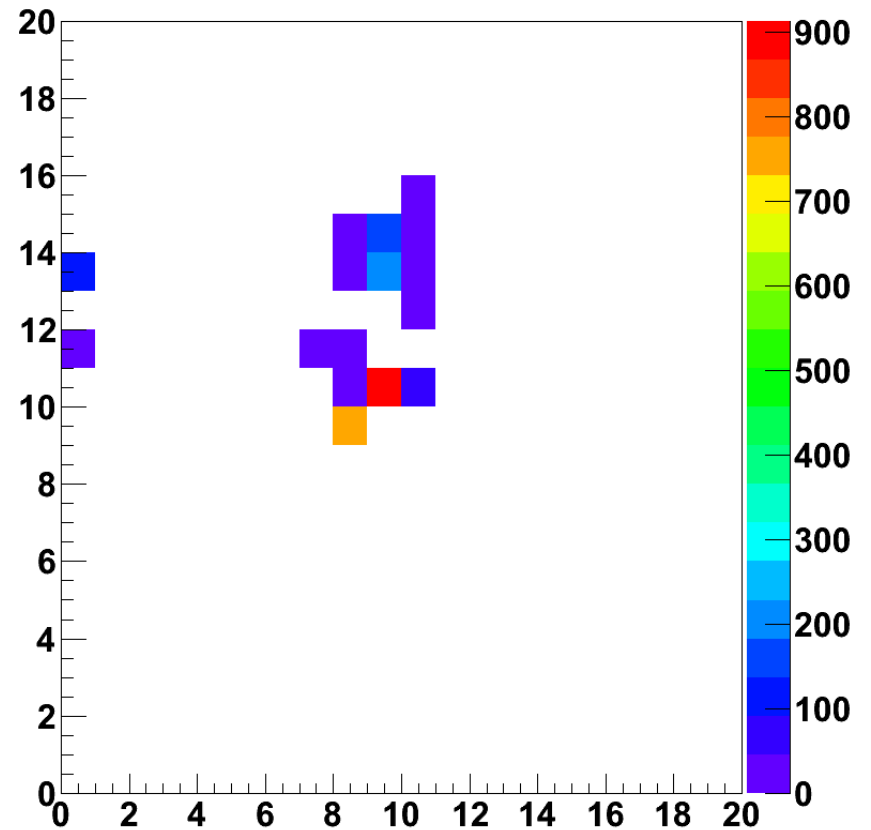


Hits in 1st Stack (10 Events)

XY – Position & Hits (Real Hit Positions)
(2000 mm × 2000 mm , 100 × 100 bins)

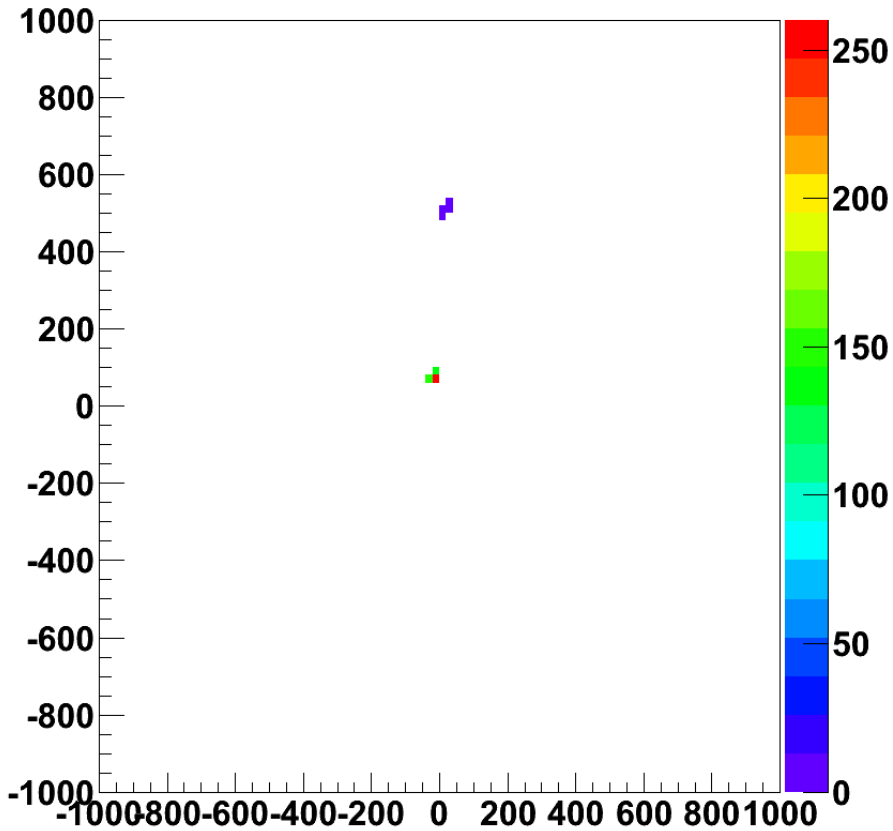


XY – BarNum & Hits (Detected Hit Positions)
(20 × 20)

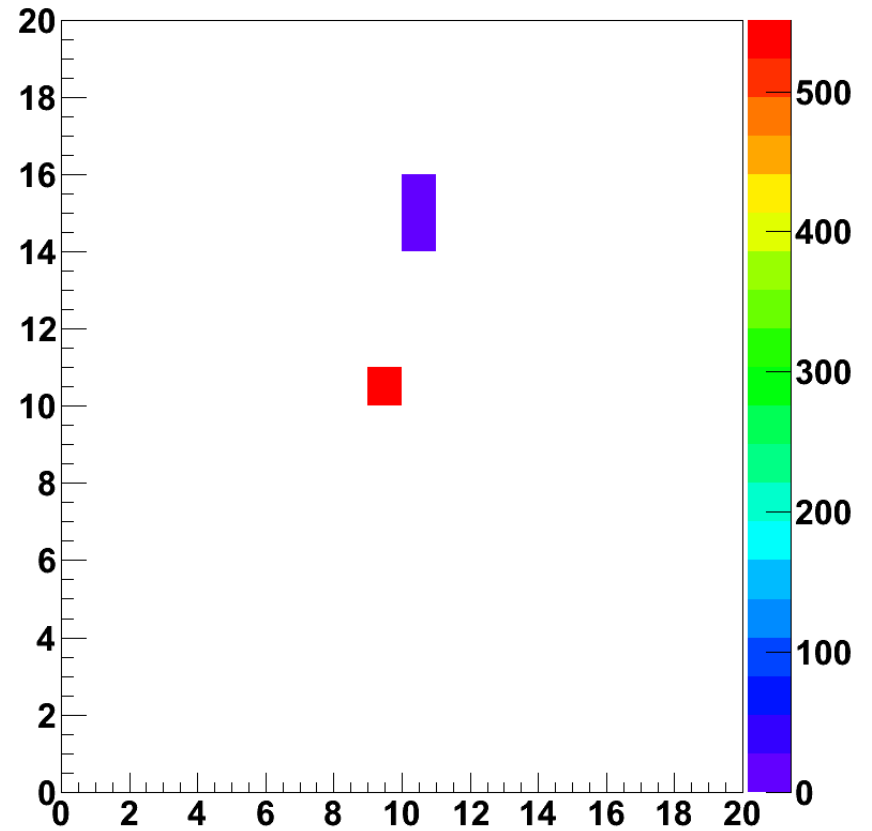


Hits in 2nd Stack (10 Events)

XY – Position & Hits (Real Hit Positions)
(2000 mm × 2000 mm , 100 × 100 bins)

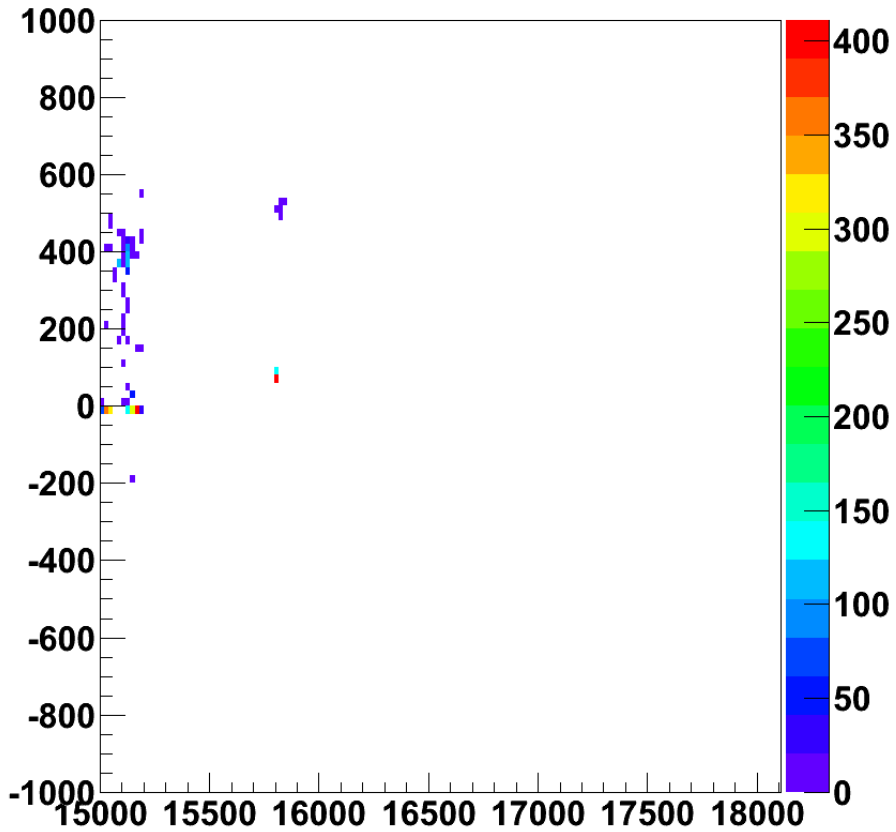


XY – BarNum & Hits (Detected Hit Positions)
(20 × 20)

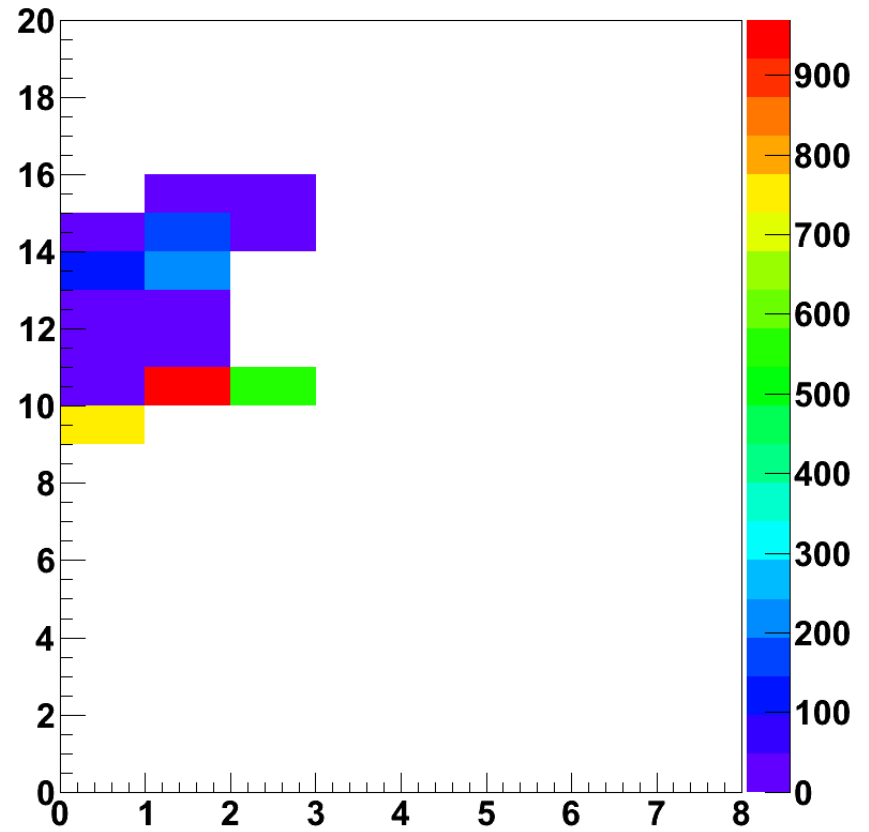


Hits in 1st ~ 4th Stack (10 Events)

ZY – Position & Hits (Real Hit Positions)
(3110 mm × 2000 mm, 156 × 100 bins)



LayerNum - yBar & Hits (Detected Hit Positions)
(8 × 20)

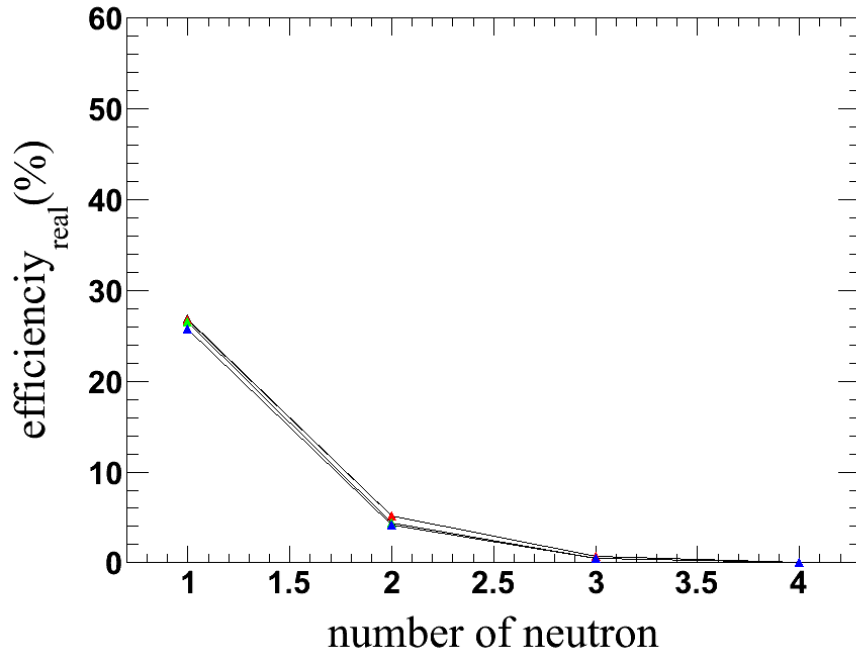


Pinpoint beam + Only Beta Condition

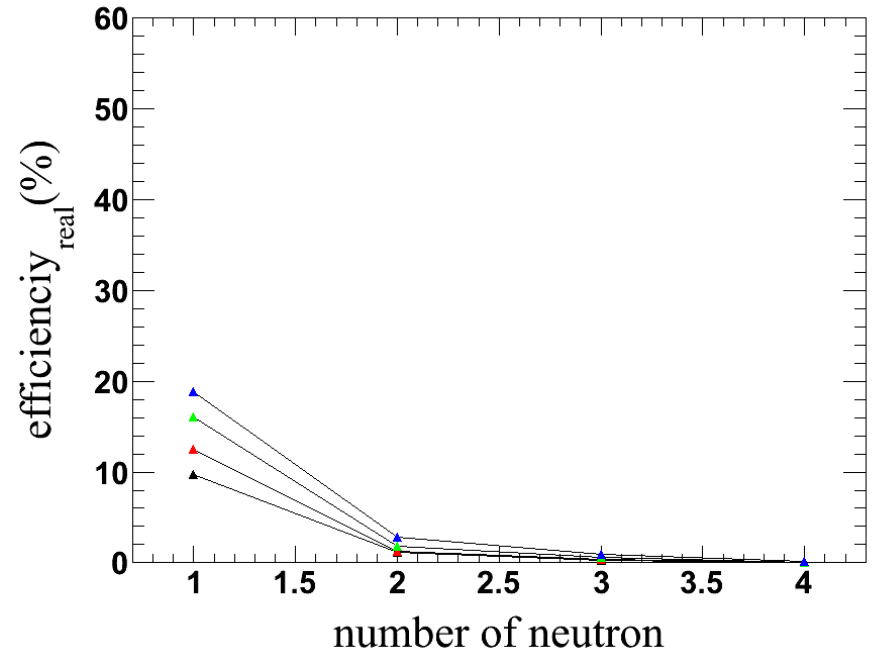
- GunPosition : (0, 0, -15000 mm)
- Momentum direction : (0, 0, 1)
- Event : 10000

Black : 3 MeV
Red : 5 MeV
Green : 7 MeV
Blue : 10 MeV

Energy : 100 MeV



300 MeV

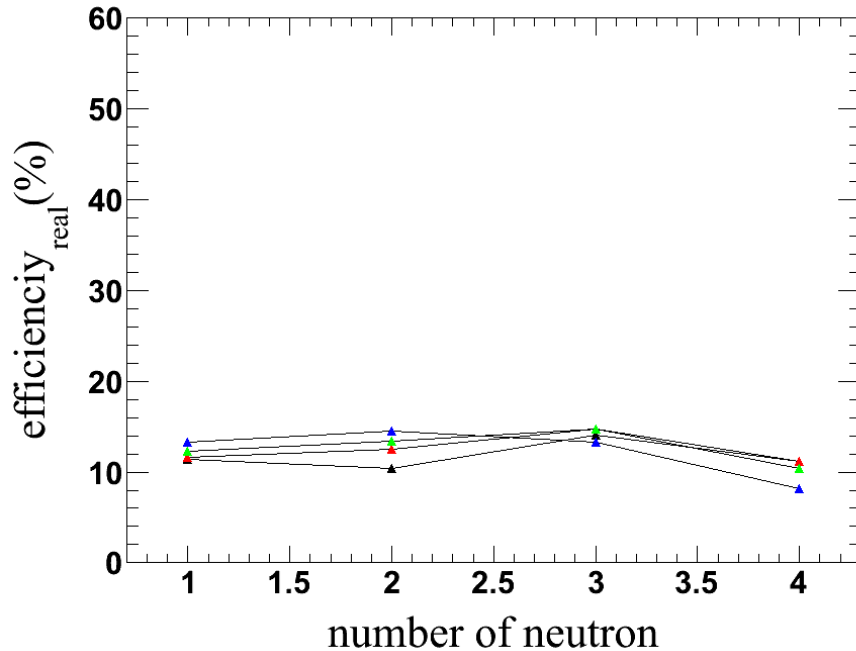


Pinpoint beam + Only Back Scattering Condition

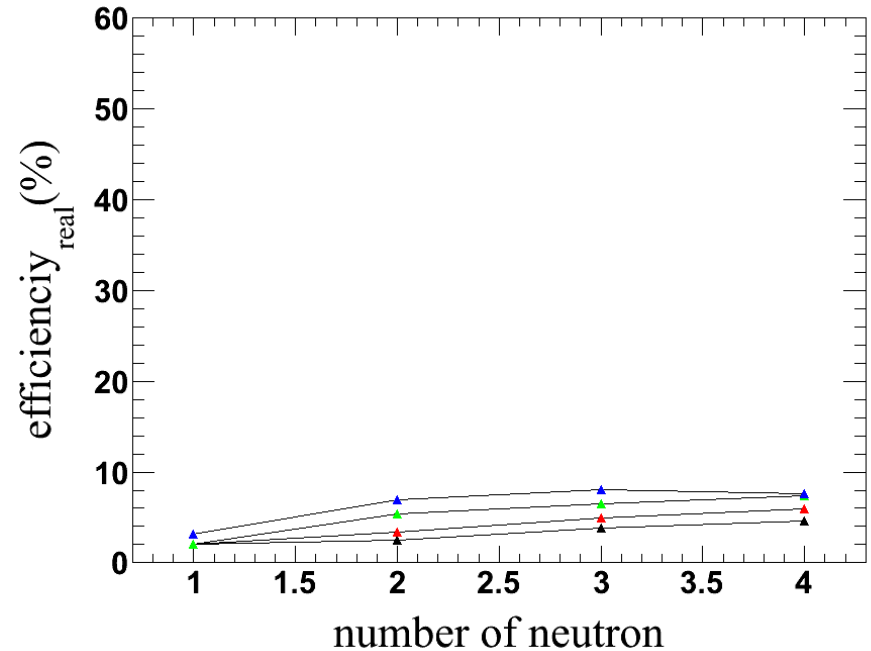
- GunPosition : (0, 0, -15000 mm)
- Momentum direction : (0, 0, 1)
- Event : 10000

Black : 3 MeV
Red : 5 MeV
Green : 7 MeV
Blue : 10 MeV

Energy : 100 MeV



300 MeV

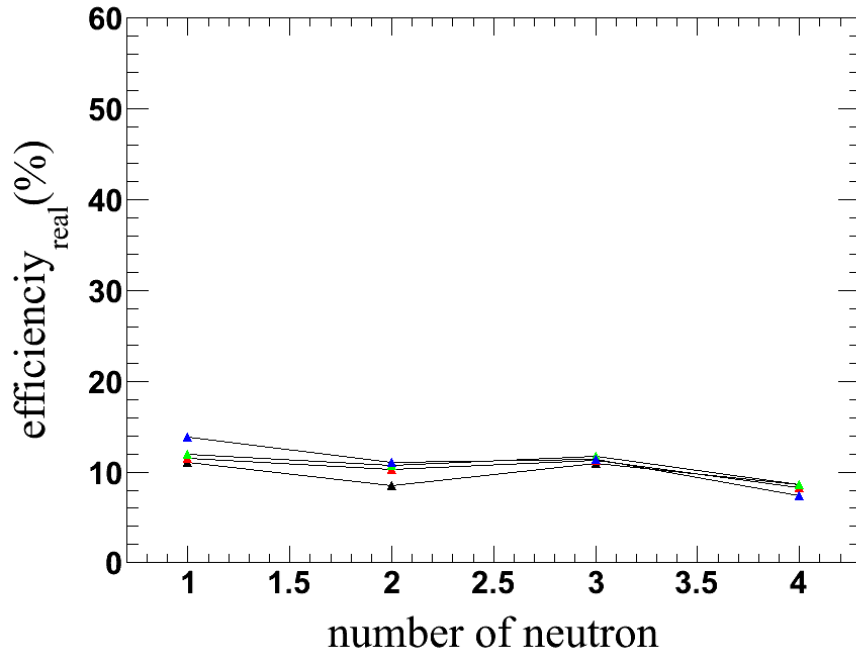


Pinpoint beam + Only Geometric Condition

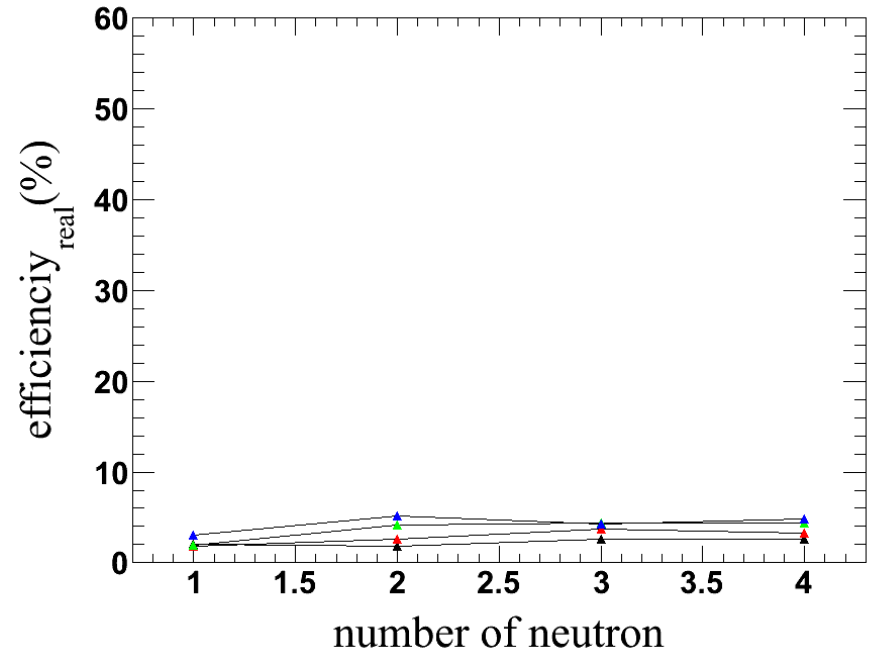
- GunPosition : (0, 0, -15000 mm)
- Momentum direction : (0, 0, 1)
- Event : 10000

Black : 3 MeV
Red : 5 MeV
Green : 7 MeV
Blue : 10 MeV

Energy : 100 MeV



300 MeV

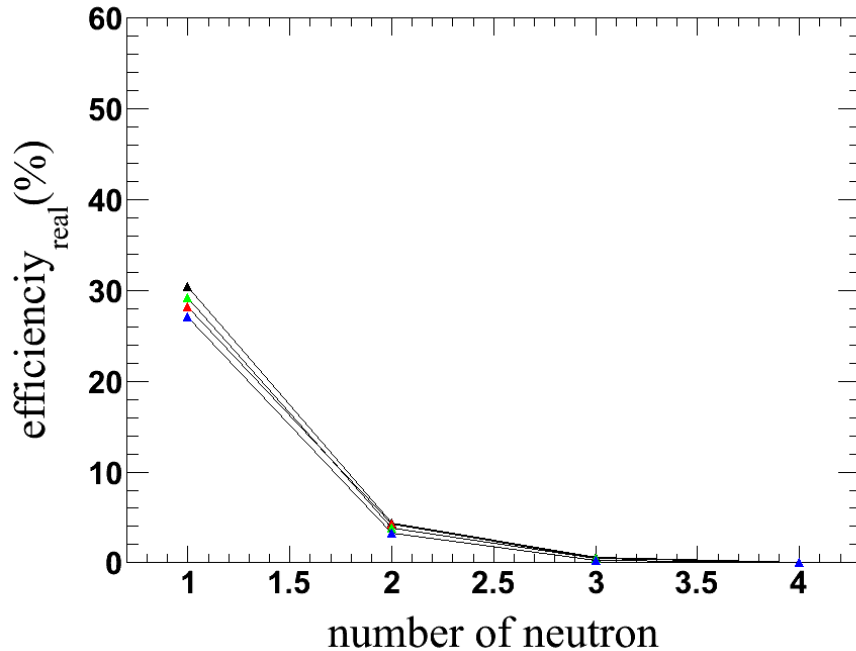


Pinpoint beam + Beta + Back Scattering

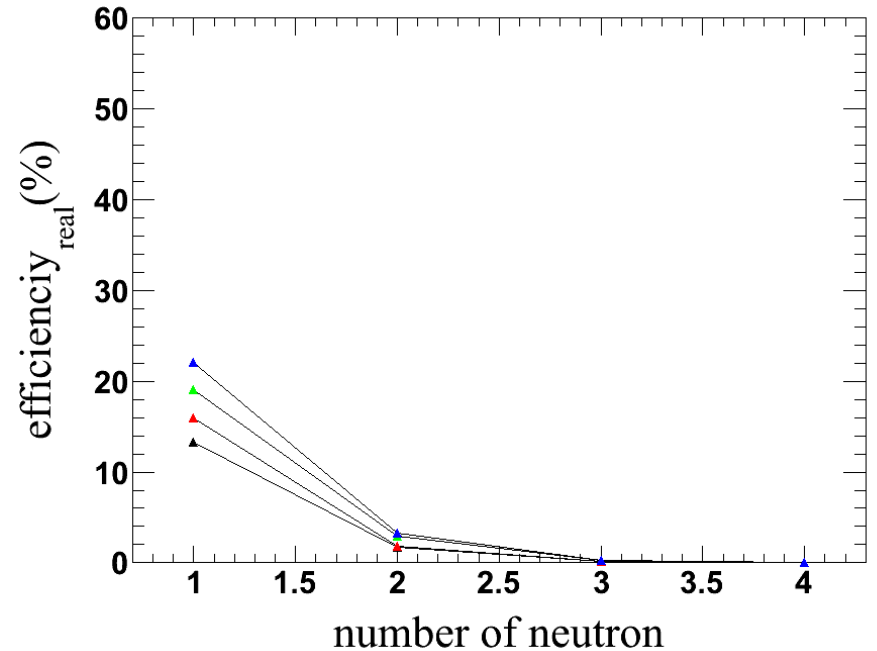
- GunPosition : (0, 0, -15000 mm)
- Momentum direction : (0, 0, 1)
- Event : 10000

Black : 3 MeV
Red : 5 MeV
Green : 7 MeV
Blue : 10 MeV

Energy : 100 MeV



300 MeV



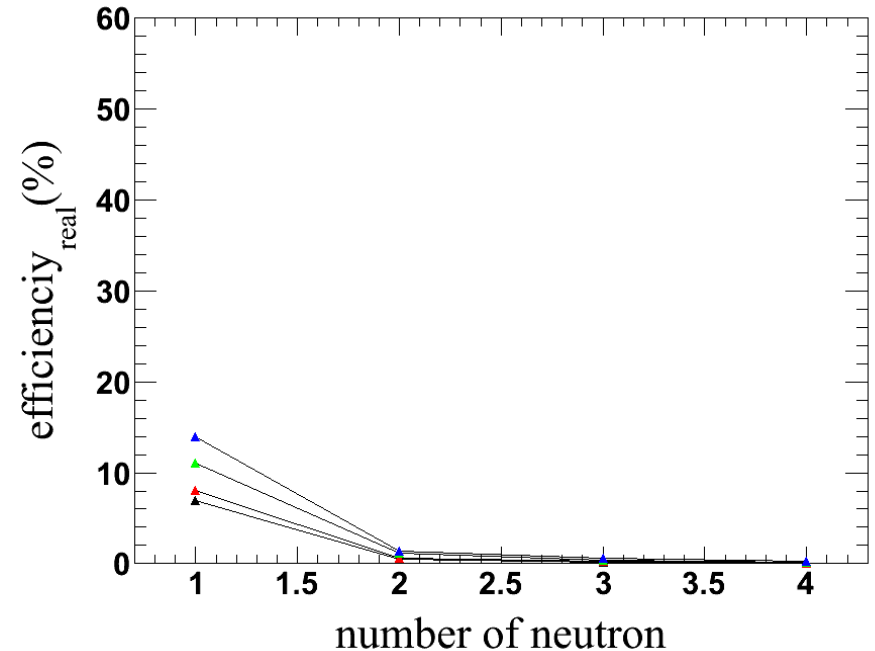
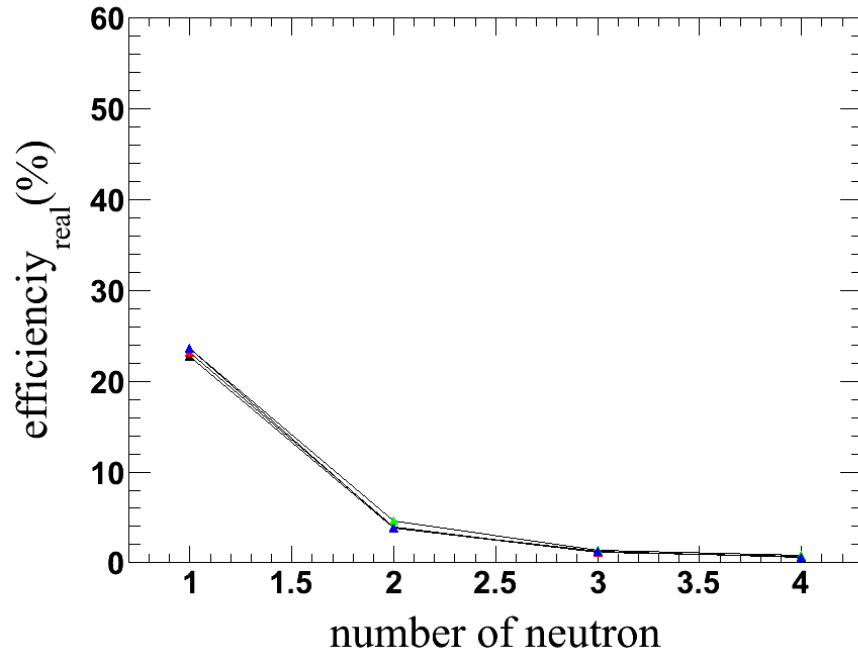
Pinpoint beam + Beta + Geometric Condn.

- GunPosition : (0, 0, -15000 mm)
- Momentum direction : (0, 0, 1)
- Event : 10000

Black : 3 MeV
Red : 5 MeV
Green : 7 MeV
Blue : 10 MeV

Energy : 100 MeV

300 MeV

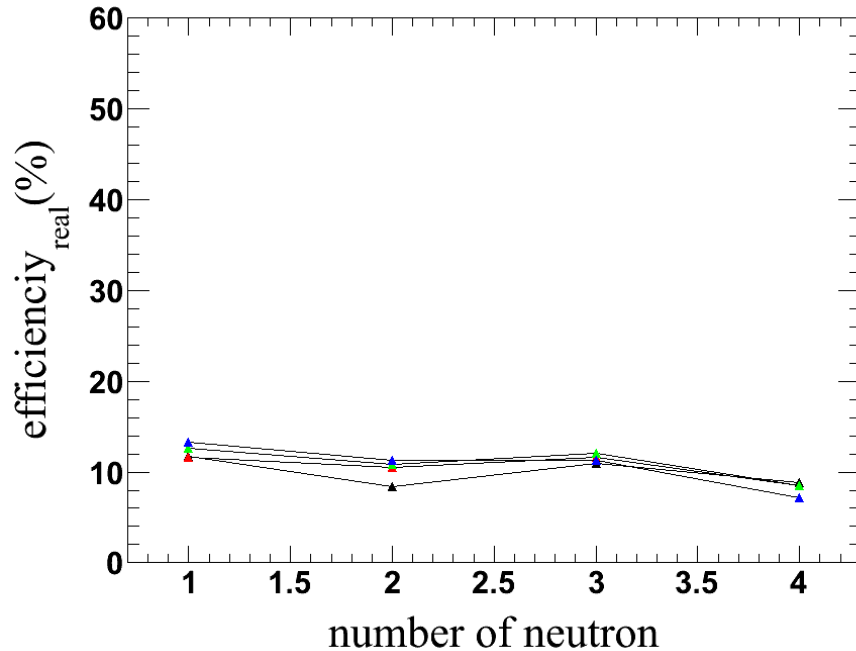


Pinpoint beam + Back Scattering + Geometric Condn.

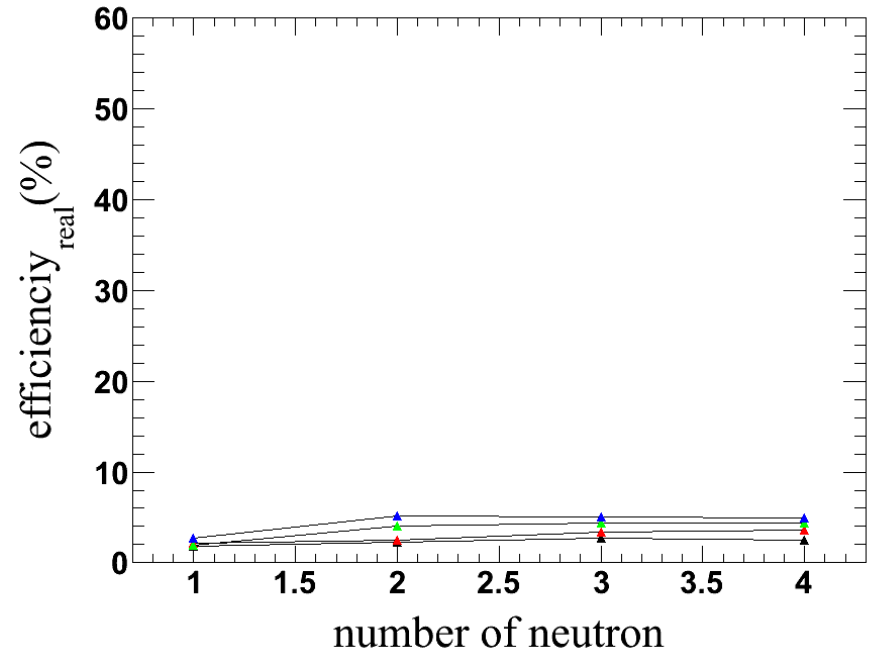
- GunPosition : (0, 0, -15000 mm)
- Momentum direction : (0, 0, 1)
- Event : 10000

Black : 3 MeV
Red : 5 MeV
Green : 7 MeV
Blue : 10 MeV

Energy : 100 MeV



300 MeV

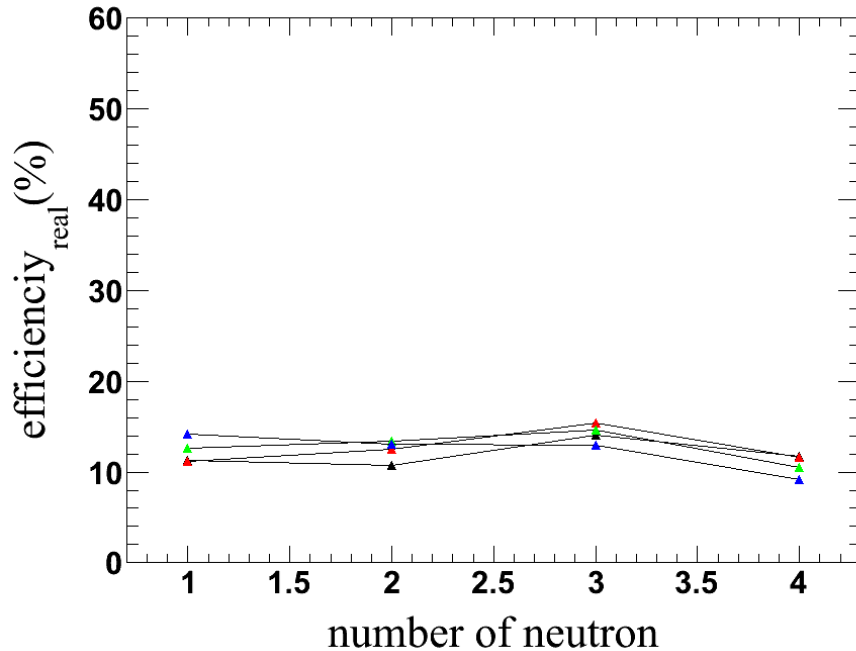


Pinpoint beam + No Conditions

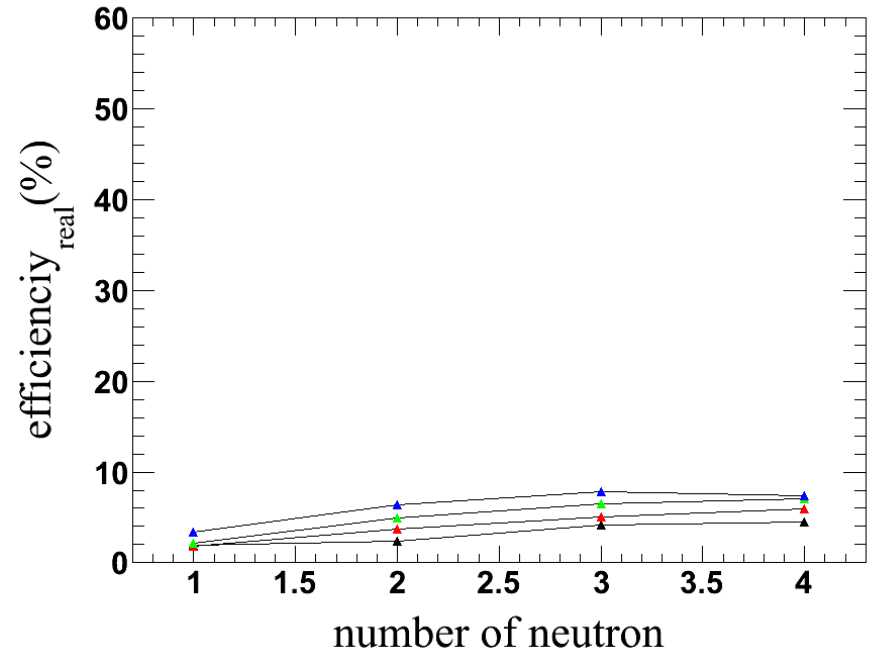
- GunPosition : (0, 0, -15000 mm)
- Momentum direction : (0, 0, 1)
- Event : 10000

Black : 3 MeV
Red : 5 MeV
Green : 7 MeV
Blue : 10 MeV

Energy : 100 MeV



300 MeV

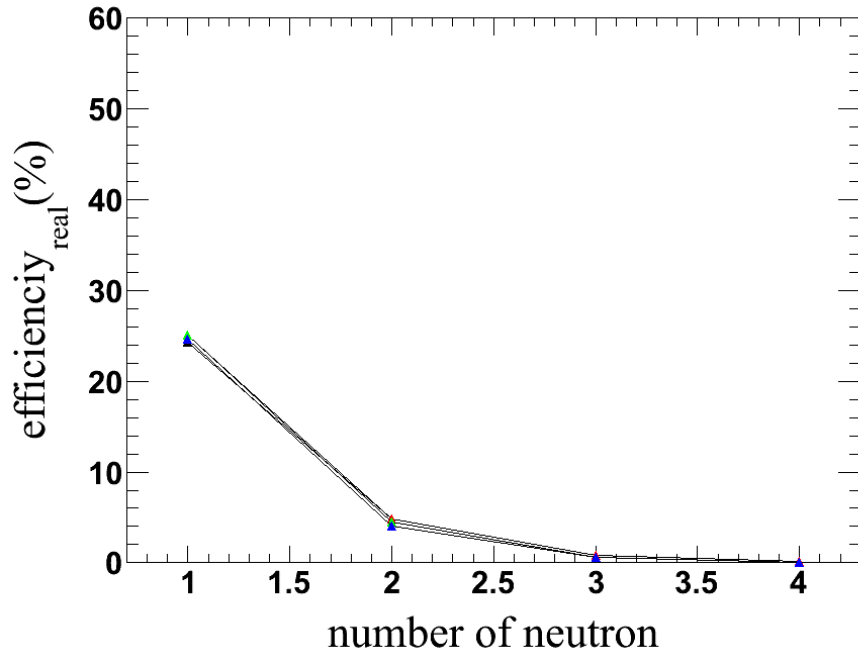


Pinpoint beam + All Conditions

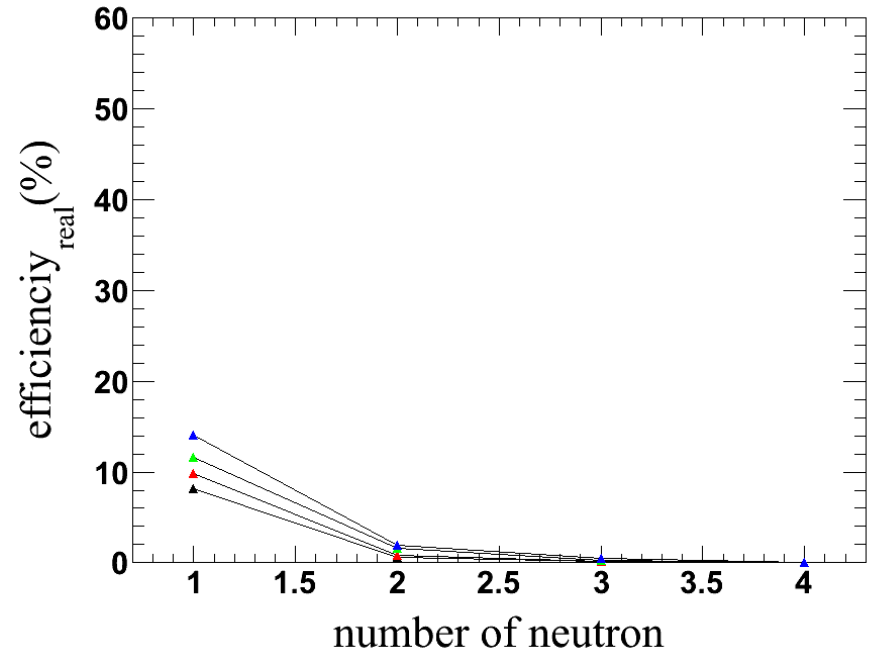
- GunPosition : (0, 0, -15000 mm)
- Momentum direction : (0, 0, 1)
- Event : 10000

Black : 3 MeV
Red : 5 MeV
Green : 7 MeV
Blue : 10 MeV

Energy : 100 MeV



300 MeV



Next Step

- I. Position resolution & time resolution of bar detector
- II. Slowly change the beam diameter or shape.
 - Finally, change the beam shape into realistically randomized beam.