

H4 Primex Data, $\pi^0\pi^0$ Final State

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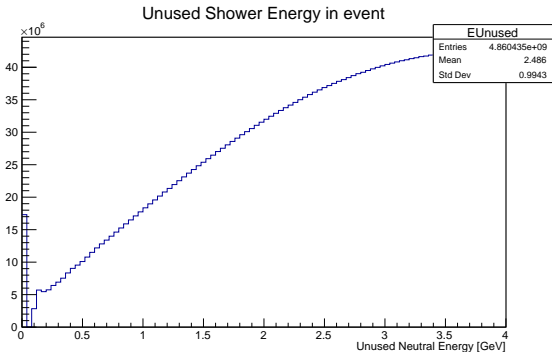
$\pi^0\pi^0$ System in He4 Primex data

Look at the Primex He4 data and explore the response of the invariant mass of the $\pi^0\pi^0$ -System with regards to various cuts.

- No unused energy
- No charged tracks -> We want magnet on with DC!
- Beam Energy, Chi2 of kin fit, Vertex
- Invariant mass of the π^0 s
- Kinematic cuts: θ , $-t$, M_{π^0}
- **Energy Balance**

Example of some cuts

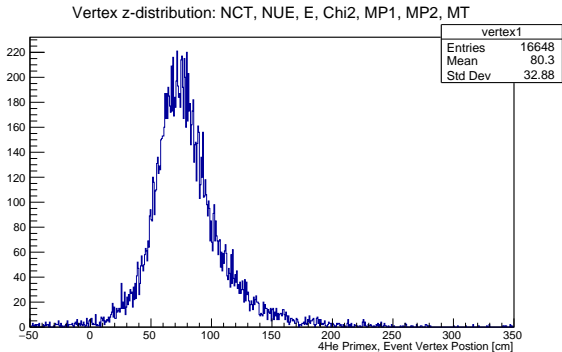
Some basic cut example, like:
Cutting on unused energy:



Example of some cuts

Some basic cut example, like:

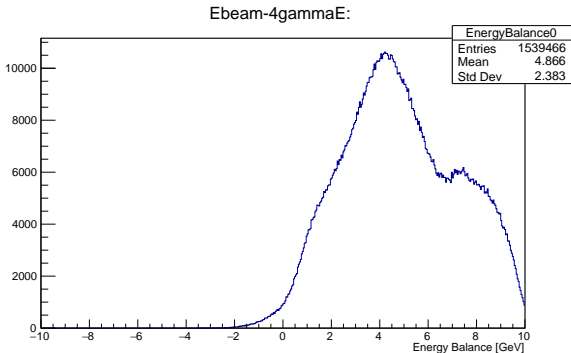
Cutting on vertex:



Example of some cuts

Some basic cut example, like:

Cuting on Energy Balance (no cuts):

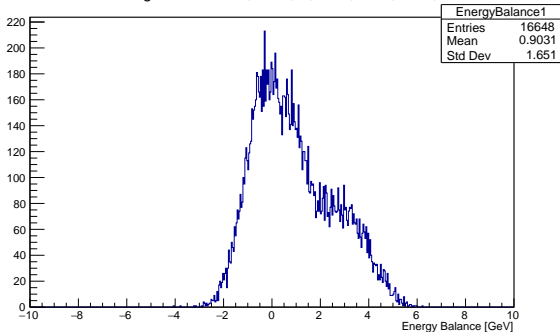


Example of some cuts

Some basic cut example, like:

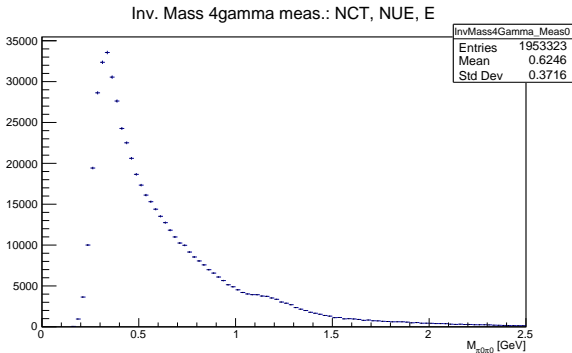
Cuting on Energy Balance (some cuts):

Ebeam-4gammaE: NCT, NUE, E, Chi2, MP1, MP2, MT



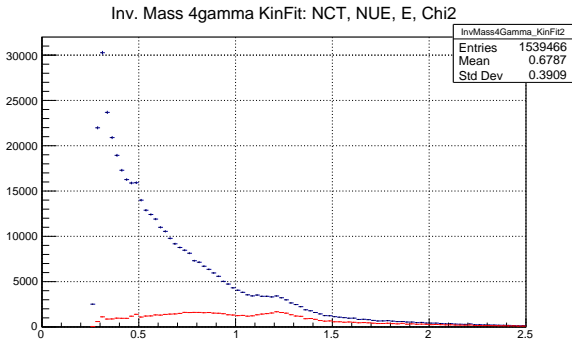
Inv Mass of $\pi^0\pi^0$

Look at Inv. Mass of 2pi system with cuts:
CUTS: NCT, NuE, E; Measured Inv. Mass.



Inv Mass of $\pi^0\pi^0$

Look at Inv. Mass of 2pi system with cuts:
CUTS: NCT, NuE, E, Chi2; Kin Fit Mass.

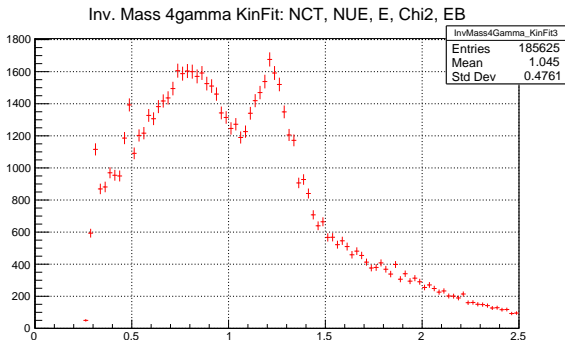


Low energy background requires Energy Balance cut!

Inv Mass of $\pi^0\pi^0$

Look at Inv. Mass of 2pi system with cuts:

CUTS: NCT, NuE, E, Chi2 AND EB; Kin Fit Mass.

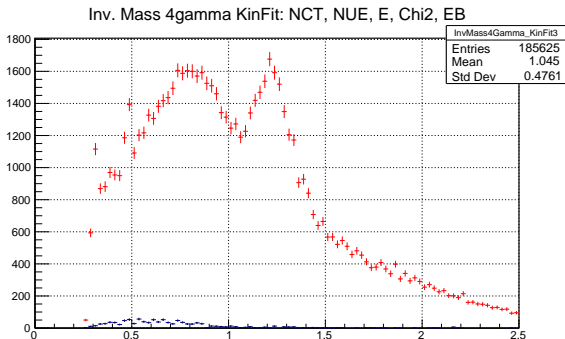


EB cut does the trick!

Inv Mass of $\pi^0\pi^0$

Look at Inv. Mass of 2pi system with cuts:

CUTS: NCT, NuE, E, Chi2, ..all cuts; Kin Fit Mass.

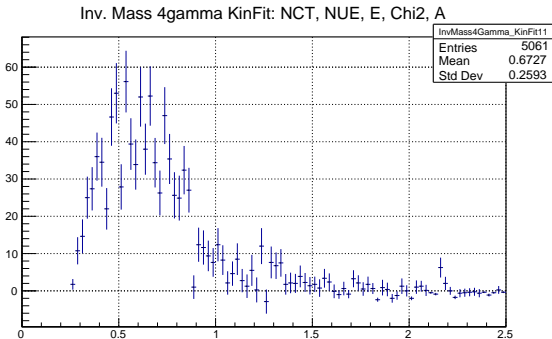


And all other cuts like $-t$, θ ,

Inv Mass of $\pi^0\pi^0$

Look at Inv. Mass of 2pi system with cuts:

CUTS: NCT, NuE, E, Chi2, ..all cuts; Kin Fit Mass.



with all cuts only.