

A log likelihood Position fit

Robert Bormuth

Leiden University and Nikhef

November 17, 2015



Shower position fit on single shower files

Apply likelihood method on single shower files (elec shower, 100 TeV)

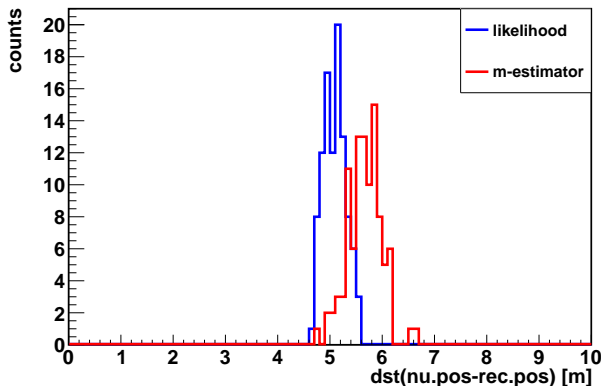


Figure : distance between simulated nu vertex and rec pos

Shower position fit on single shower files

Apply likelihood method on single shower files (elec shower, 100 TeV)

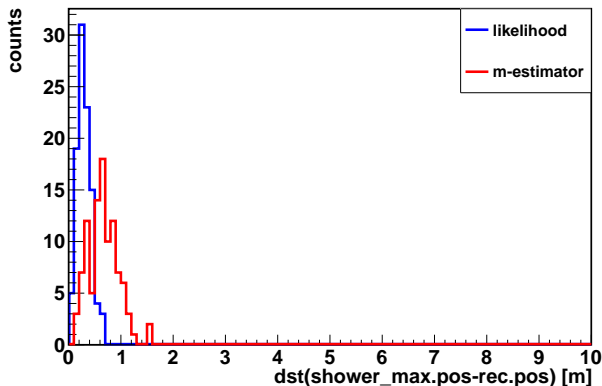


Figure : distance between calculated shower maximum and rec pos

Shower position fit on single shower files

Apply likelihood method on single shower files (elec shower, 100 TeV)

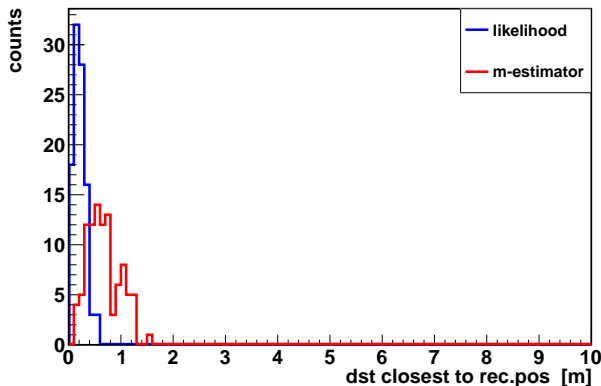


Figure : distance of closest approach to simulated original electron dir

2 shower position fit: Hit selection

Last time:

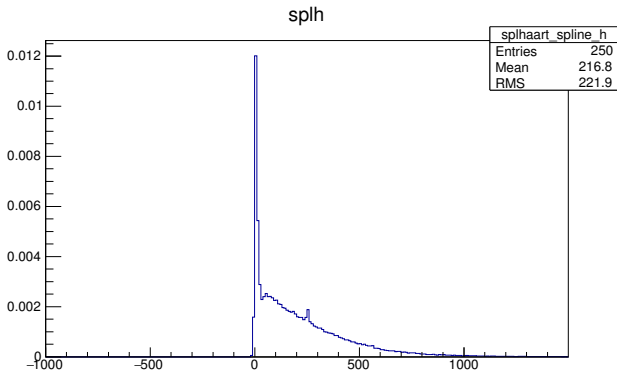
- Merge all hits on PMT within 300 ns
- Merge all hits on a DOM within 20 ns into coincidence
- take all coincidences within ± 800 ns from input shower

Now:

- Merge all hits on PMT within 300 ns
- Make a L1 selection with $\Delta t \leq 20$ ns (only two hits per L1)
- all L1 within ± 800 ns from input shower

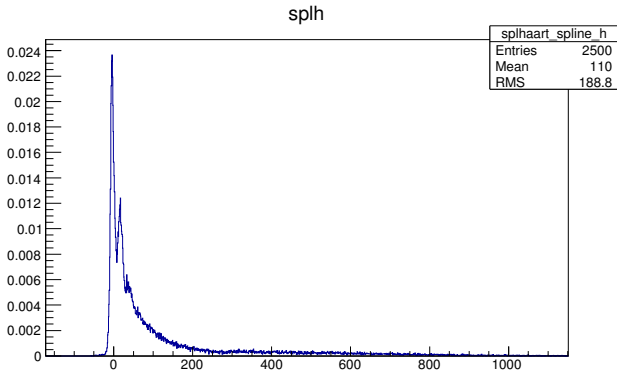
Spline fit to residual

all hits



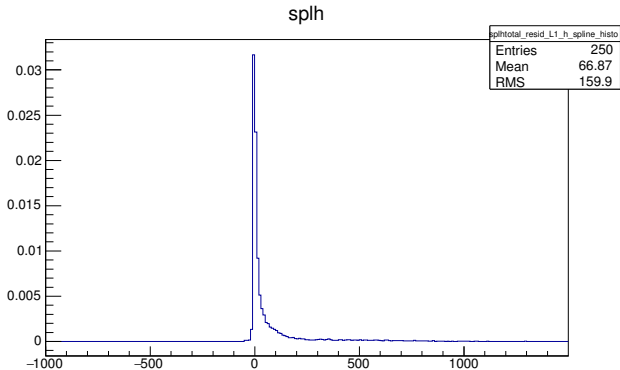
Spline fit to residual

Coincidence selection

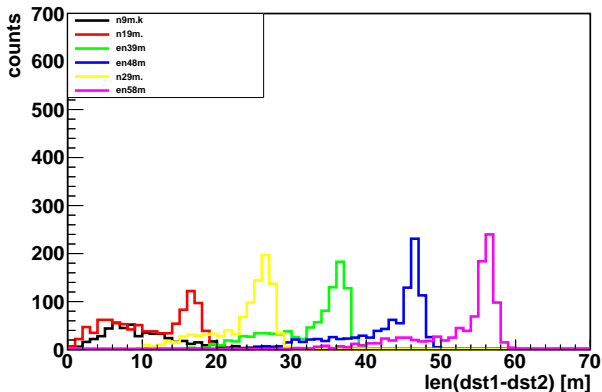


Spline fit to residual

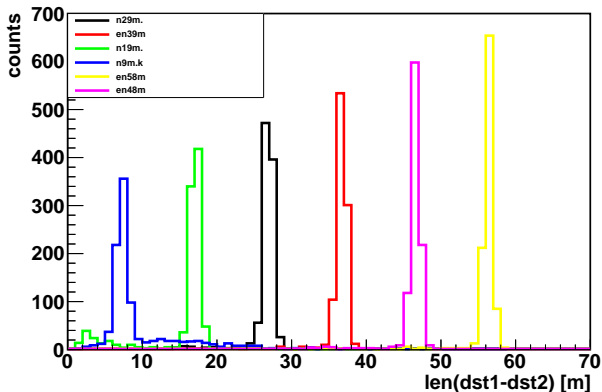
L1 selection



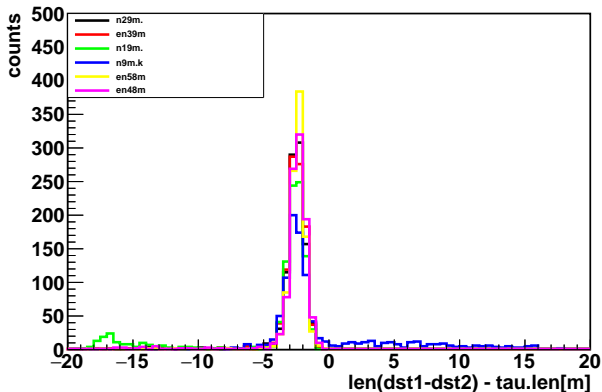
Two shower fit performance: coincidence



Two shower fit performance: L1



Two shower fit performance: L1



Two shower fit on single shower events

