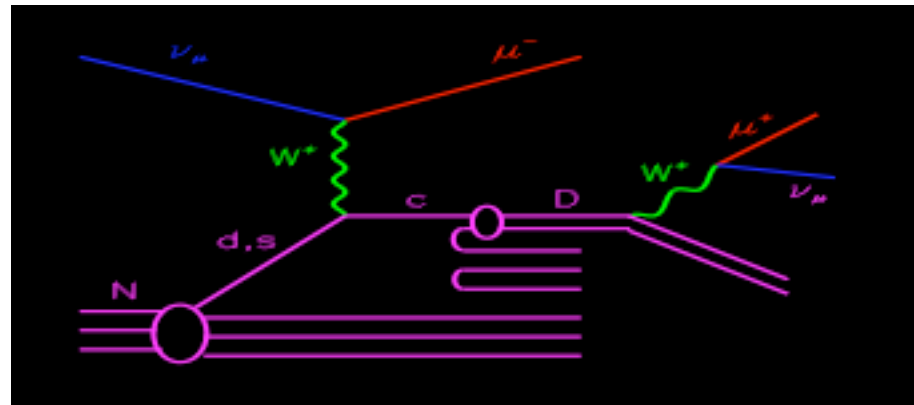


Pre-selection of dimuon event



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Pre-selection

This is very very preliminary: first try

- Start with MadPIDAnalysis code
- Add a second (largest) track
- Add hit info for both tracks
- Add truth info for tracks

Like to have a standard ntuple

May be for common use

Pre-selection cuts

Tried with only minimal cut

- Default cut:
 - `is_fd_nd + (trkfitpass || nd_reclaim)`
- Energy cut > 2 GeV (both)
- PID cut > 0.85 (first)
- Track length cut > 10 (both)
- Chi2/ndof cut < 5.0 (both)
- delta vertexZ cut < 0.5 m

Data Vs MC

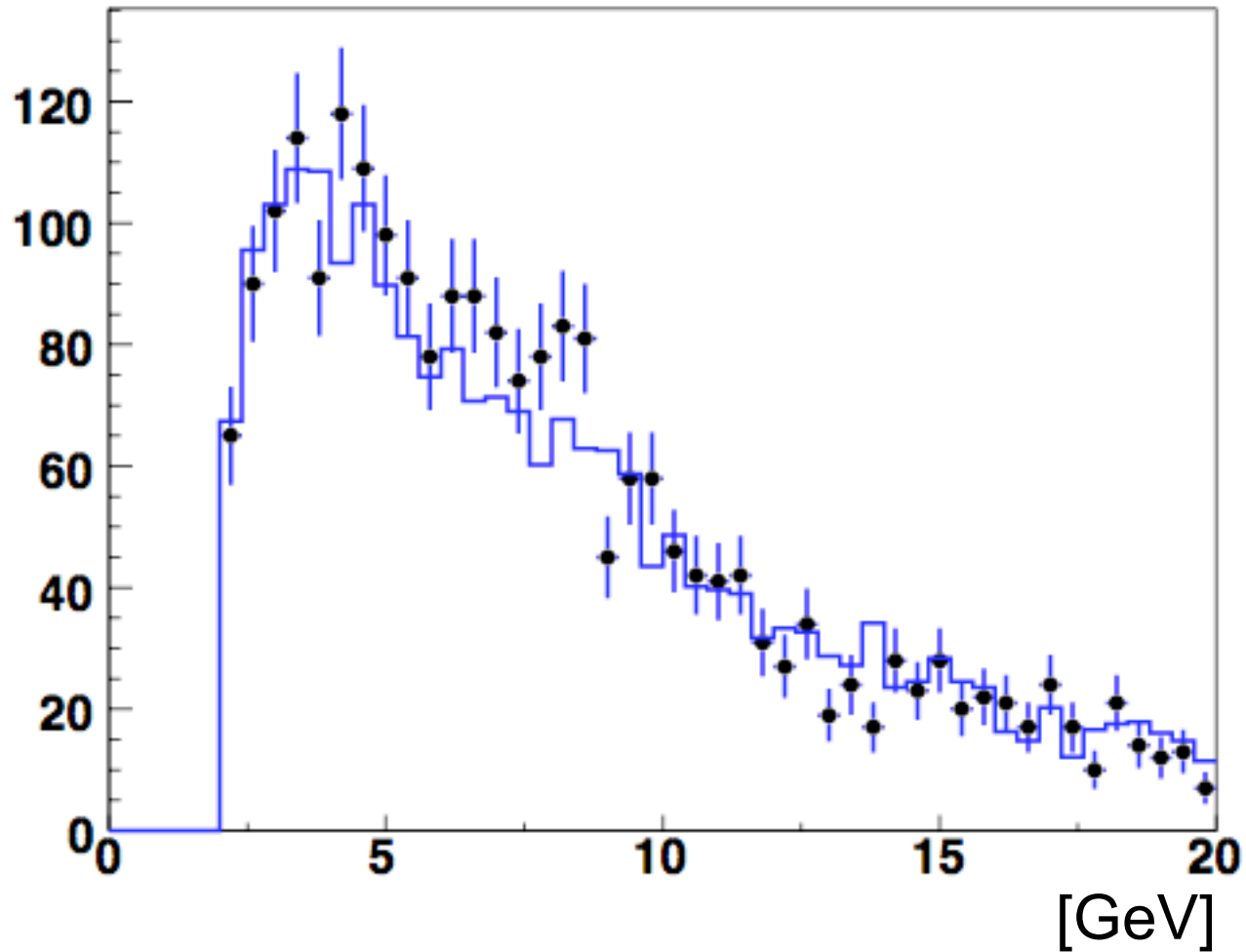
- Data from afs area of 2005:
(June-December 2005)

`sntp.cedar.phys.0`

- MC:
 - diakon_00.cedar
 - Total 725 files

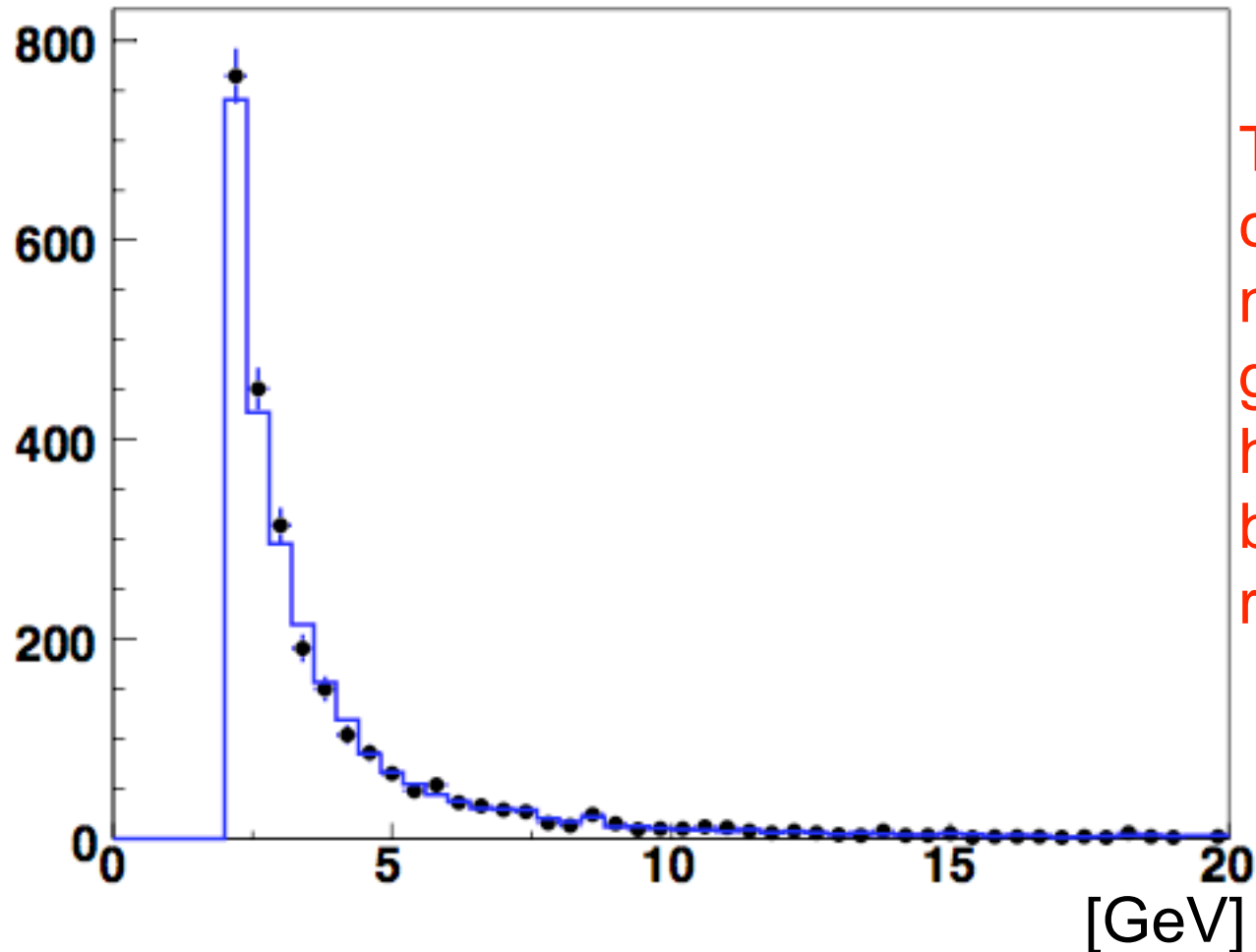
Data Vs MC: track energy

The energy of first muon track



Data Vs MC: track energy

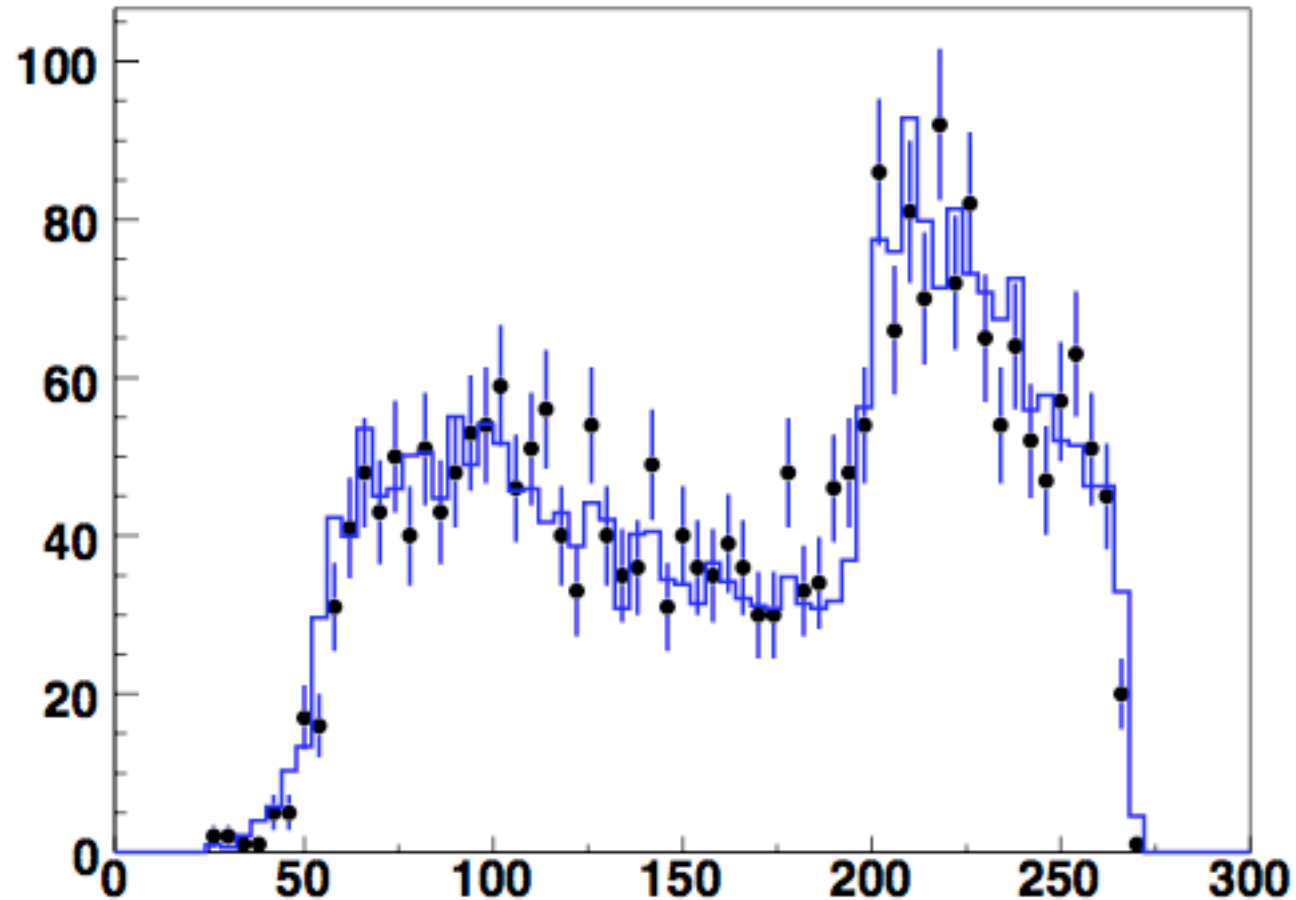
The energy of second muon track



This very stringent cut for second muon but gives good preliminary handle on background rejection

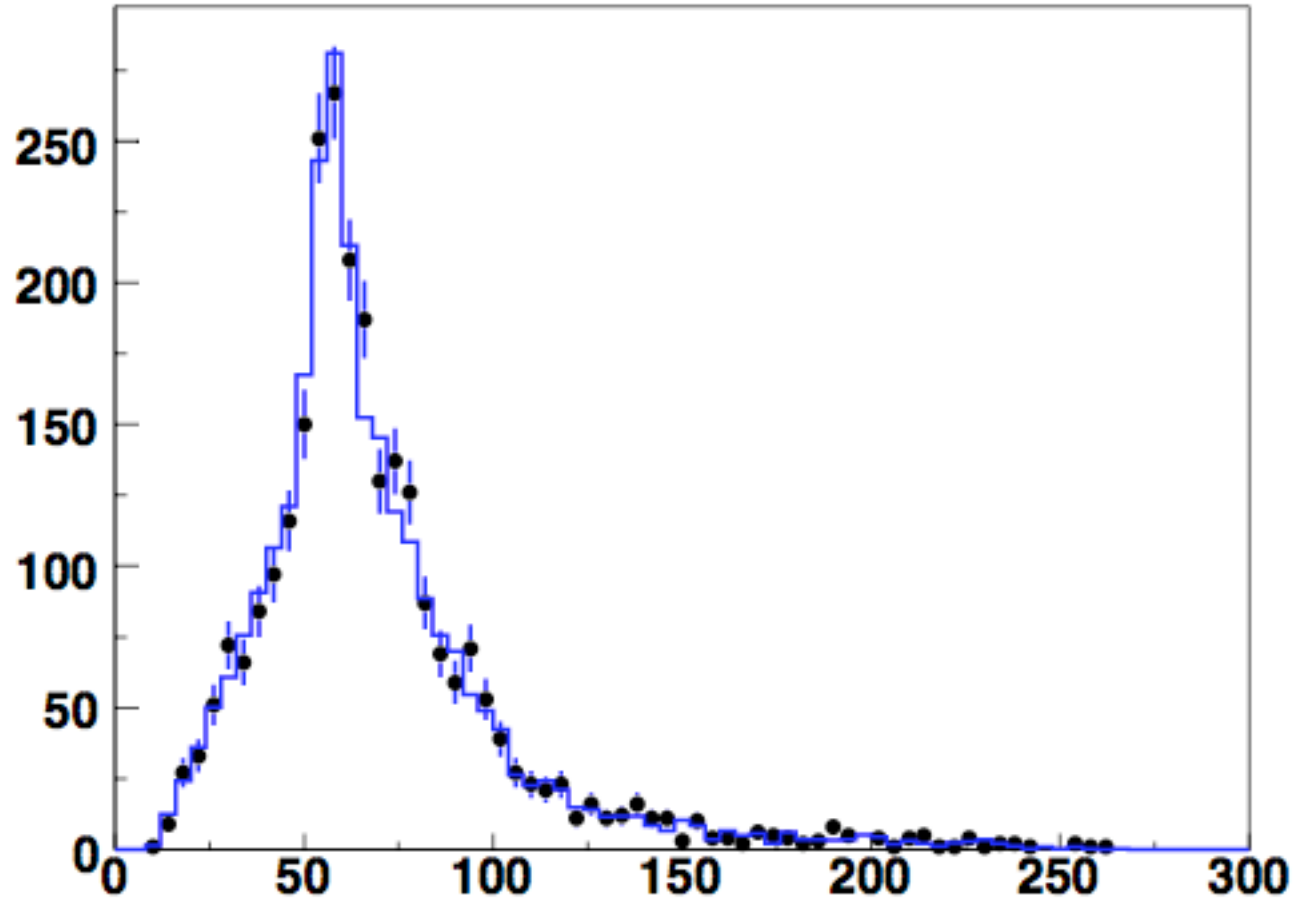
Data Vs MC: track length

The Length of first muon track



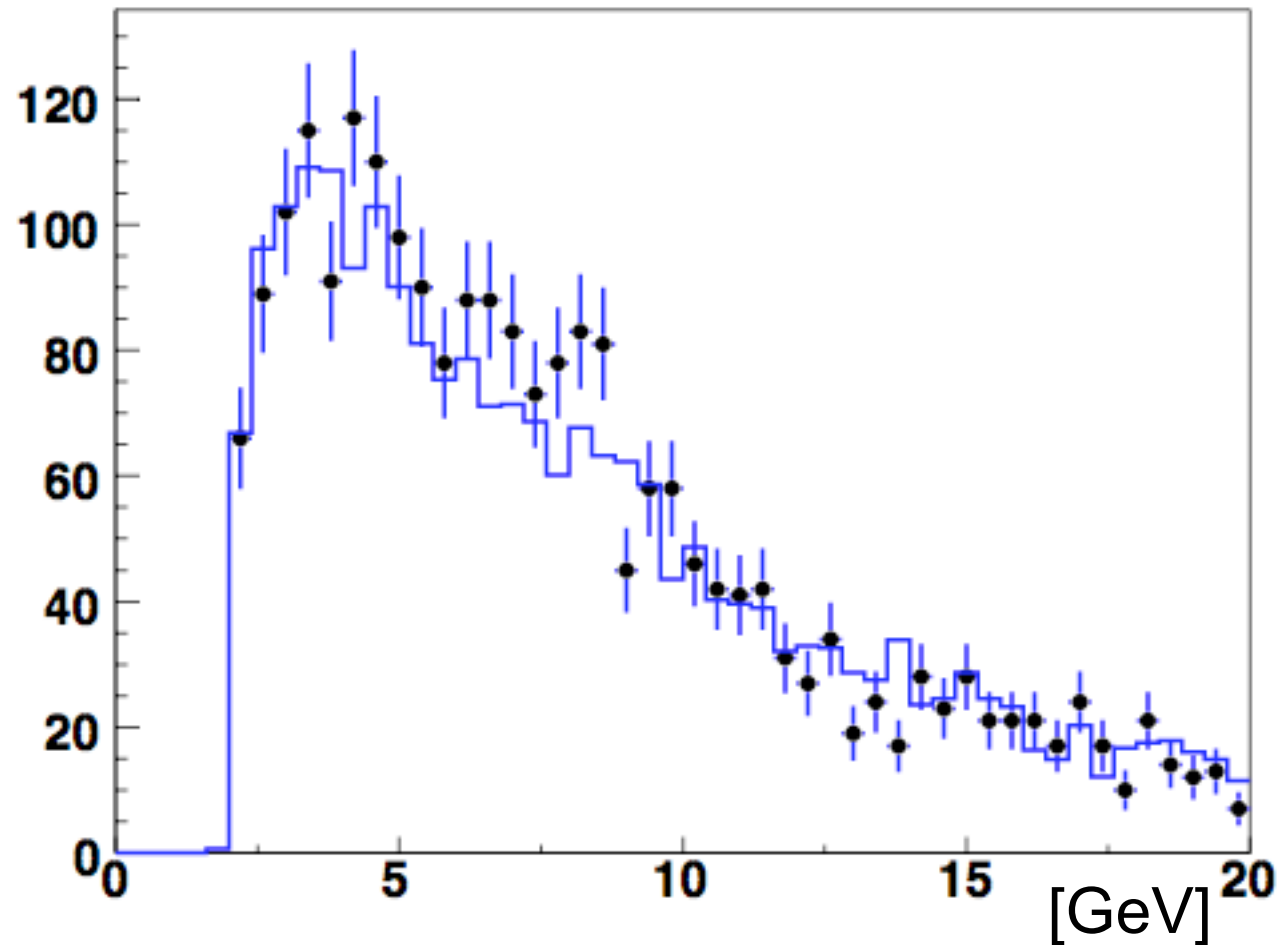
Data Vs MC: track length

The Length of second muon track



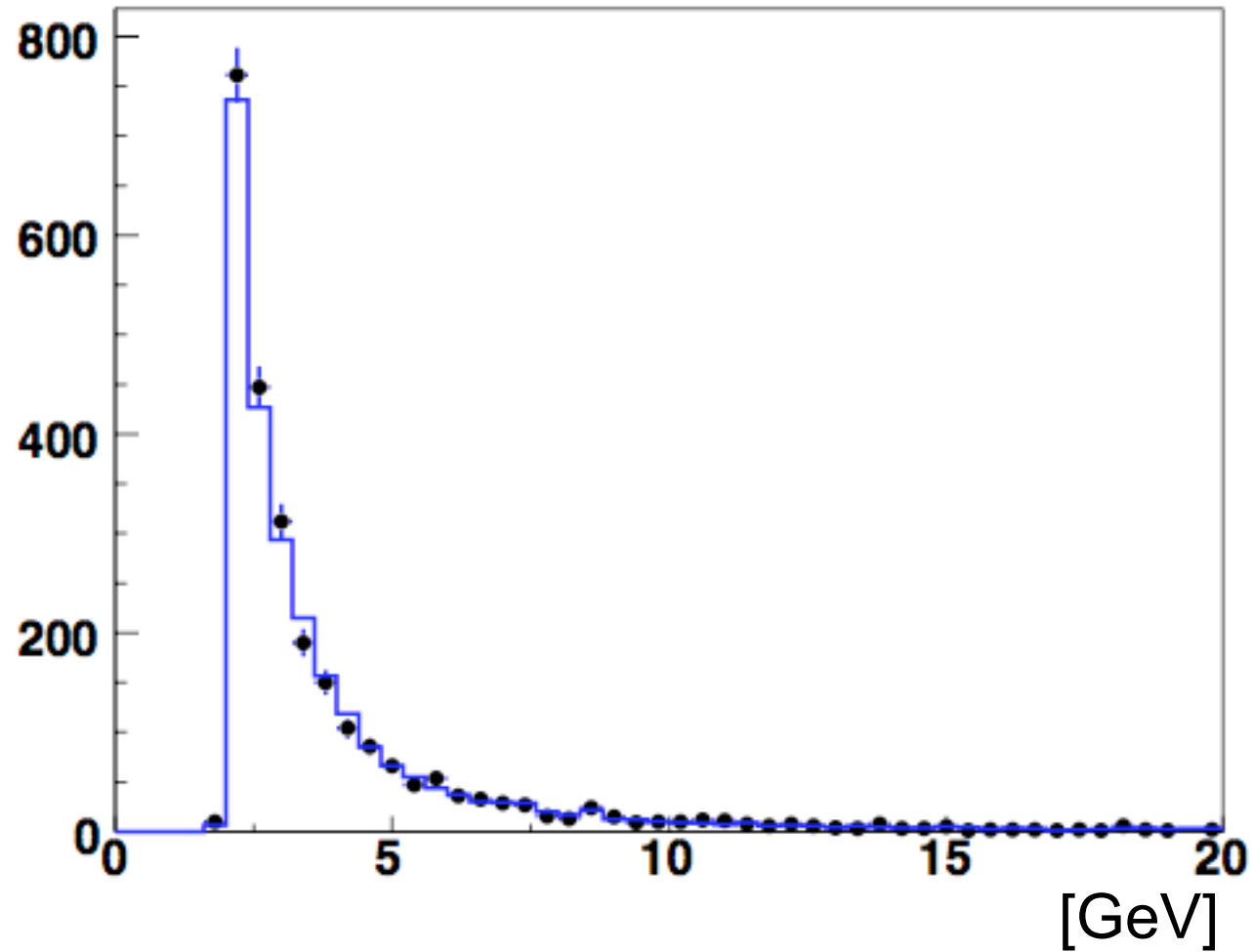
Track momentum

The momentum best of first muon track



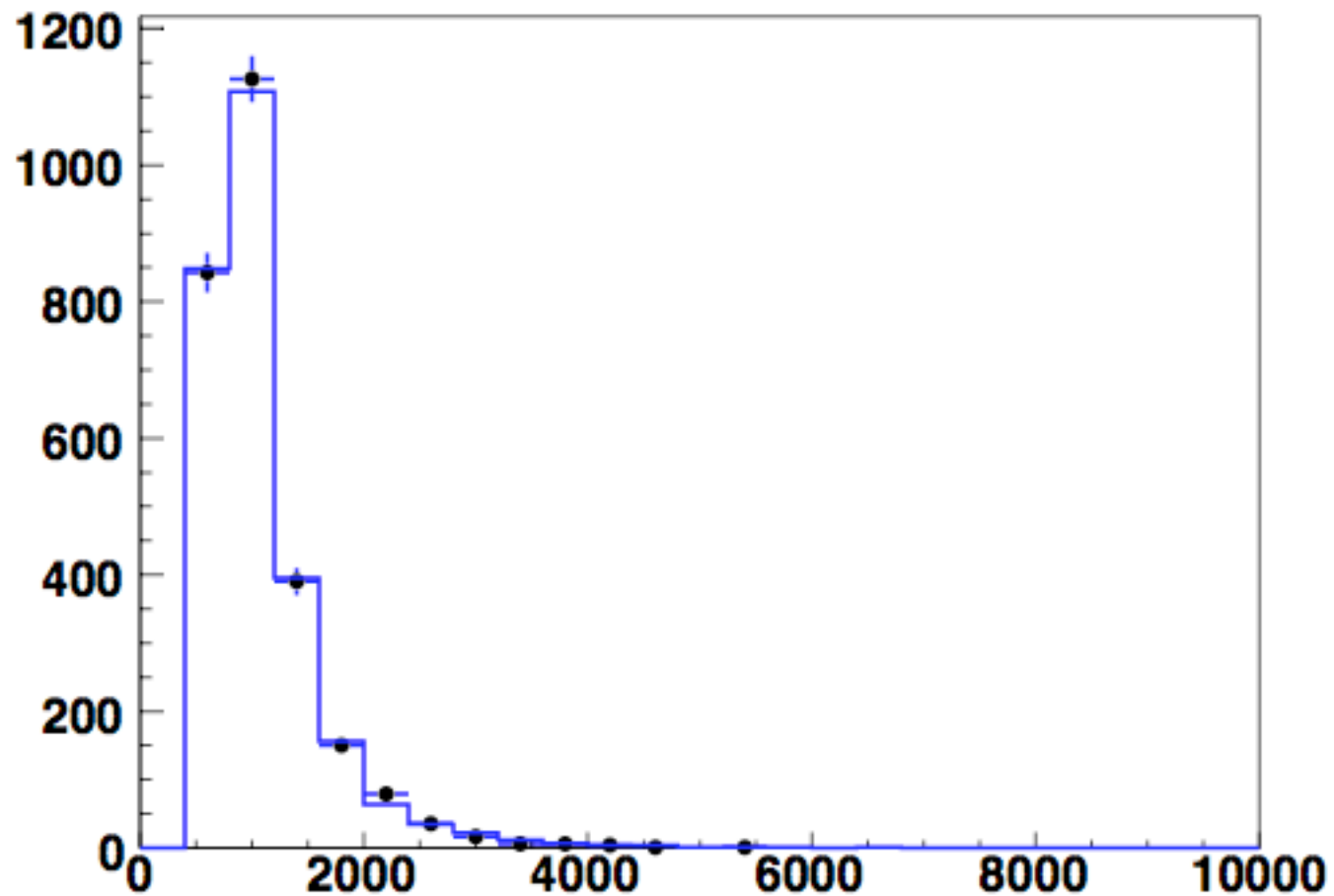
Track momentum

The momentum best of second muon track



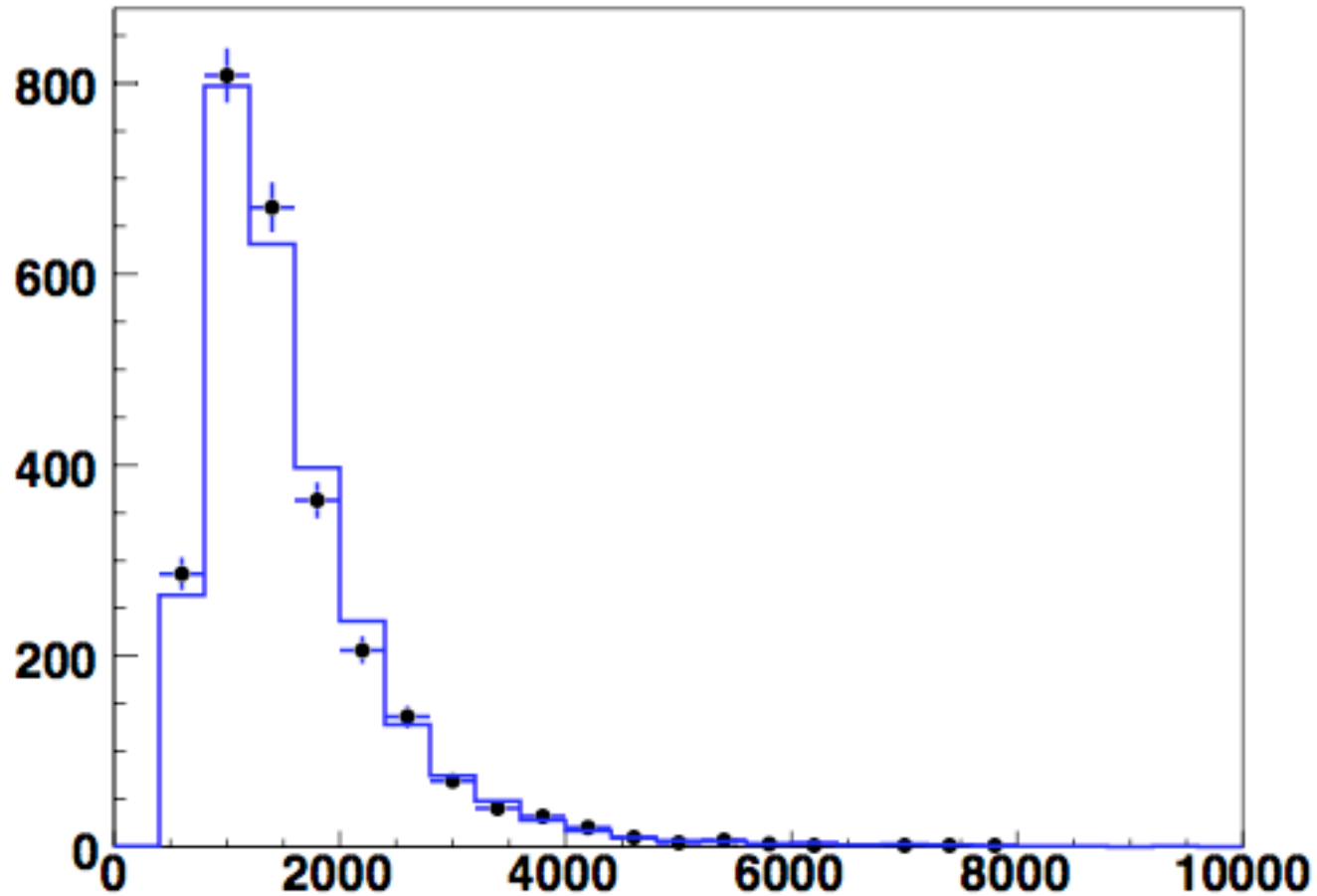
Pulse height per plane

The pulse height per plane of first muon track



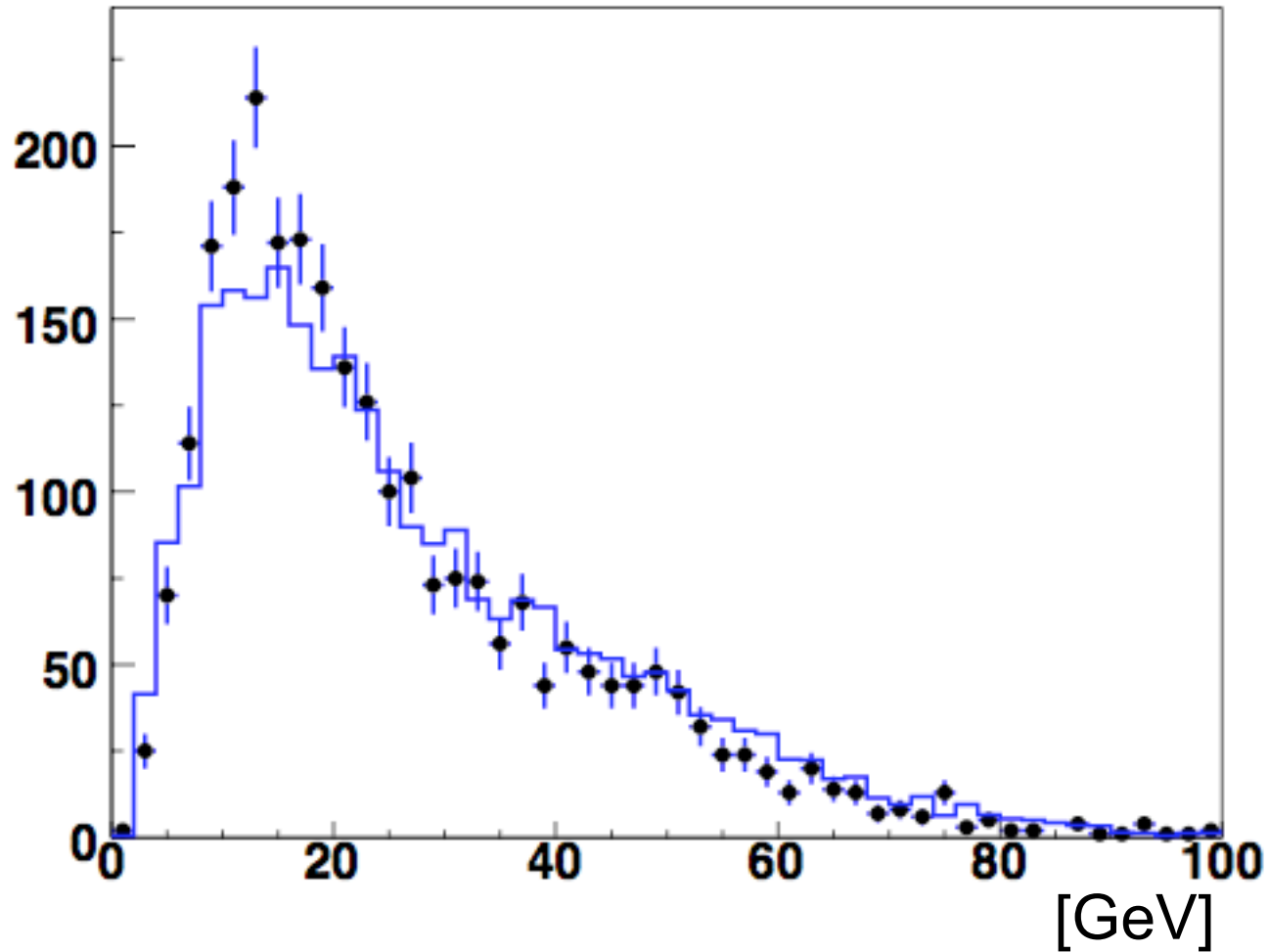
Pulse height per plane

The pulse height per plane of second muon track



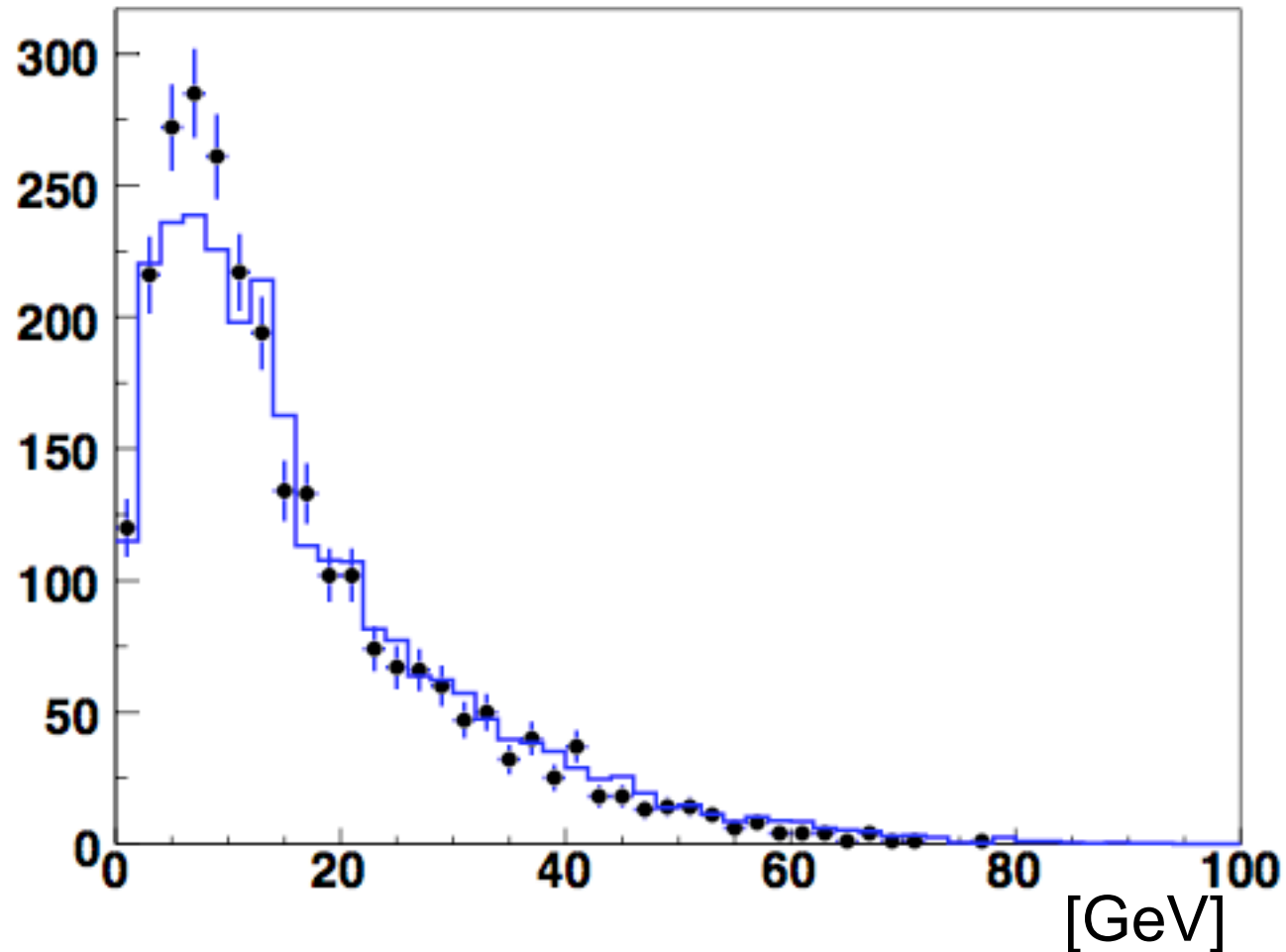
Neutrino energy

Reconstructed Neutrino Energy



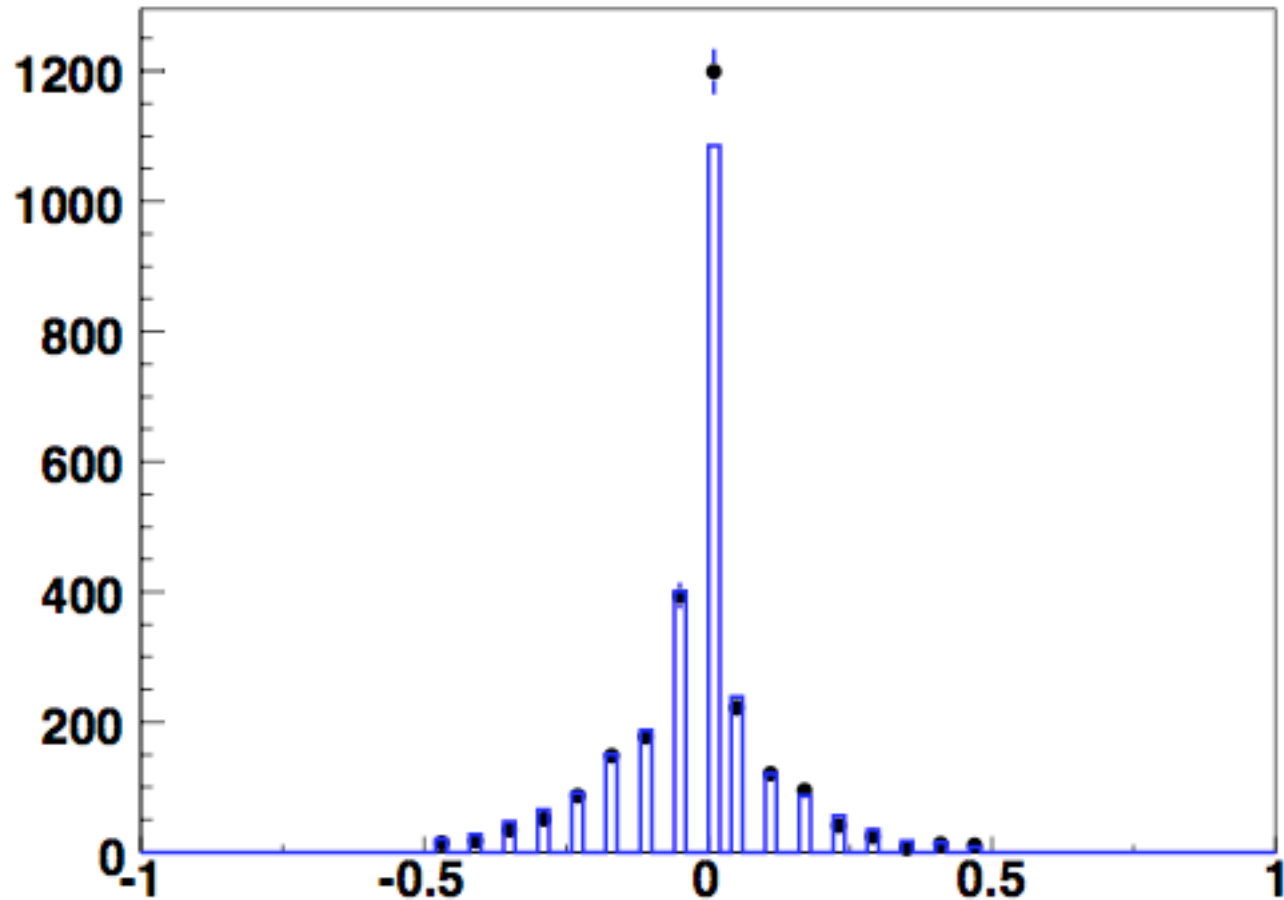
Event shower energy

The shower energy in the event



delta vertex Z

The delta Z in the event



Selection Efficiency

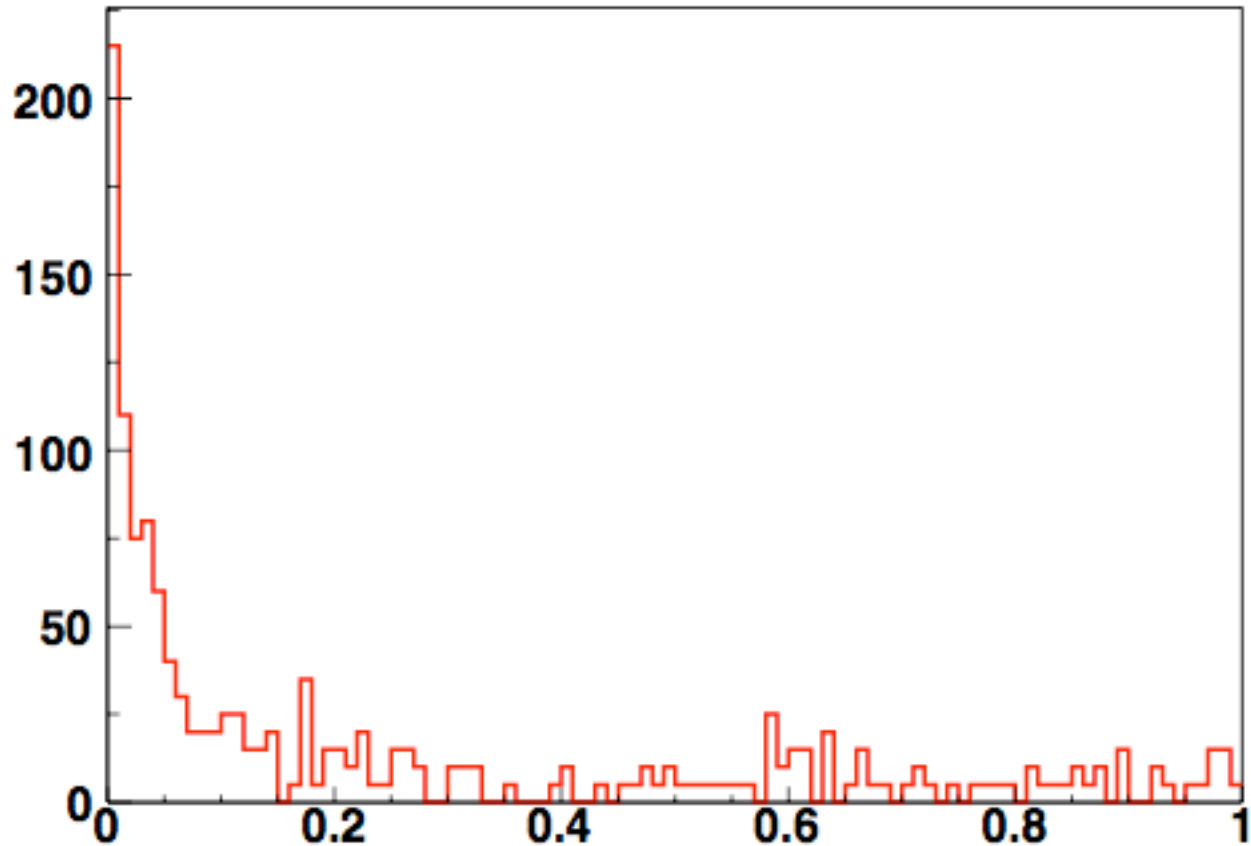
No cut	19148	23294K	Eff (%)	S/B (%)
def	5216	50815	100	10
energy	2134	7653	41	28
pid	2040	7334	39	28
length	2040	7327	39	28
chi2	2040	7327	39	28
vtxZ	1894	6895	36	27

Total data events selected: 2658 events

PID of second track

- What about PID of second track ?
- Try to run over mrcc sample so the first track is already removed
- No cut put except the default FD cut

PID of background



Excellent: PID cut very useful to remove background

PID Vs Energy cut

Def cut	275	1540
Energy cut	140	450
Pid 50	150	390
Pid 60	150	310
Pid 85	115	135

PID cut for second track better than energy cut

Conclusion

- First try to preselect dimuon events
- Poor efficiency and purity for the moment : can be improved
- PID for second track could be useful!

- MC for signal needed
- More people are welcome to join

Back up: hadron energy

Reconstructed Hadron Energy

