

Initial Mip Finding

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Improvements

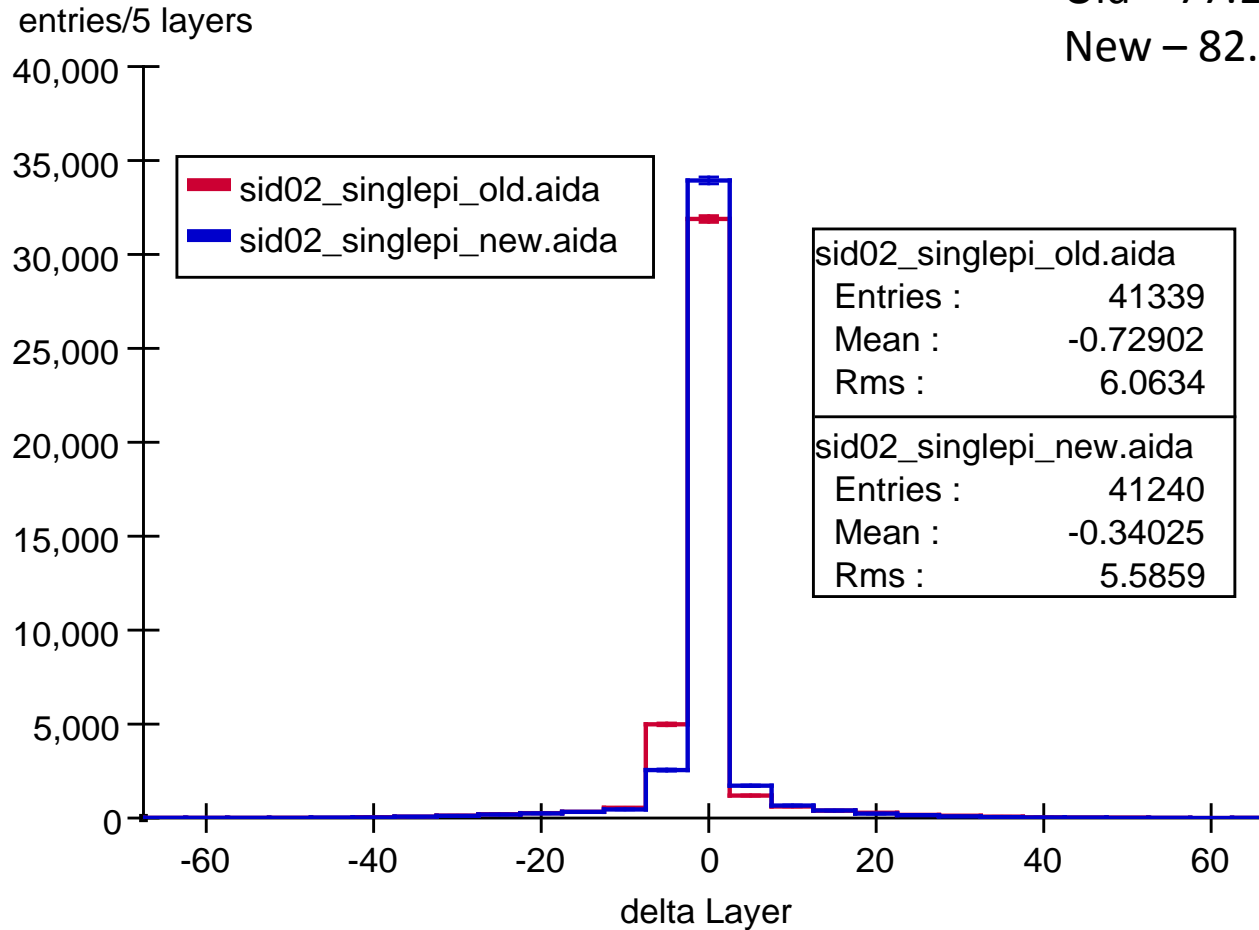
- Use extrapolated track positions, with $\langle dE/dx \rangle$ corrections, to follow mip.
- Use in both muon finding and shower point finding.
- Compare to existing code.
- First look at single pions, $E = 5, 10, 20, 50, 100$ GeV

ShowerFinderMips - Delta layer

Fraction +- 2 layers:

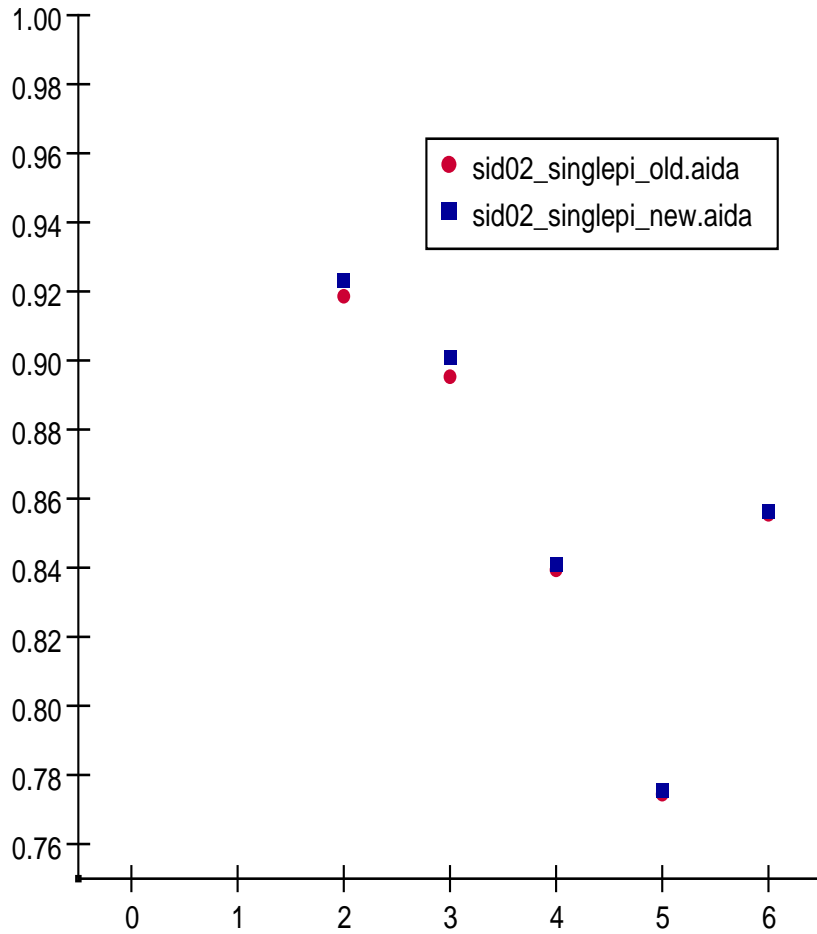
Old – 77.1%

New – 82.3%

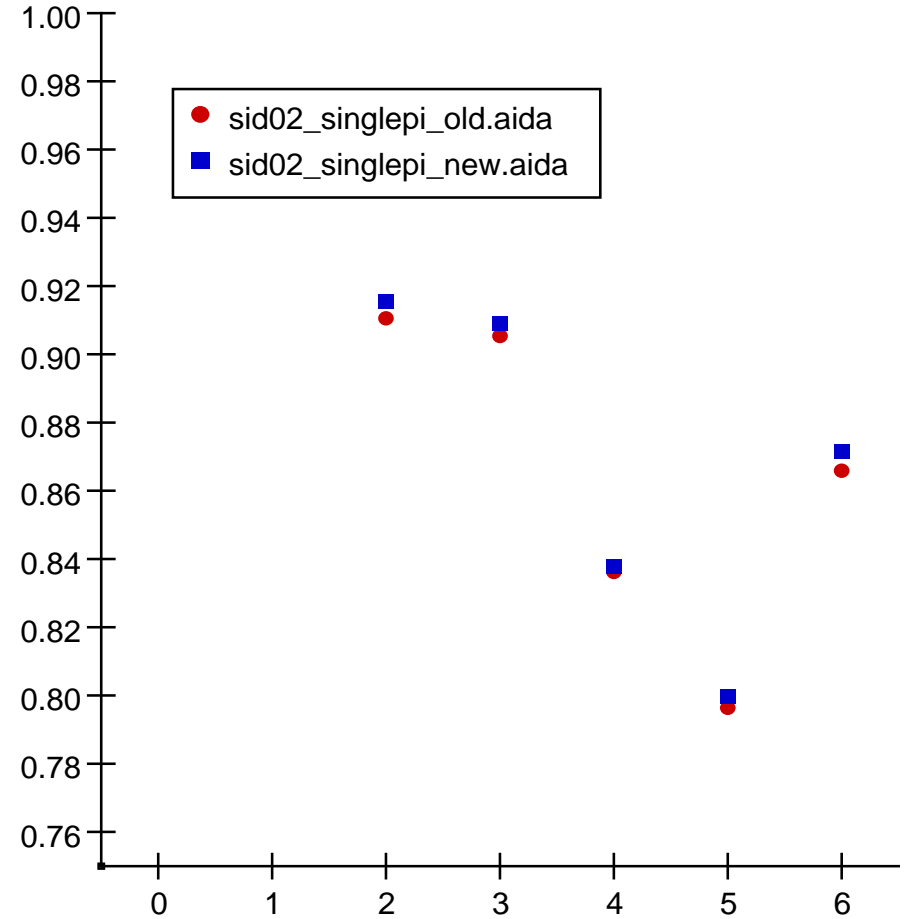


Efficiency for reconstructing 1 pi and nothing else

0.0<ct<0.8 - eff-1ch only vs Ebin



0.8<ct<0.97 - eff-1ch only vs Ebin

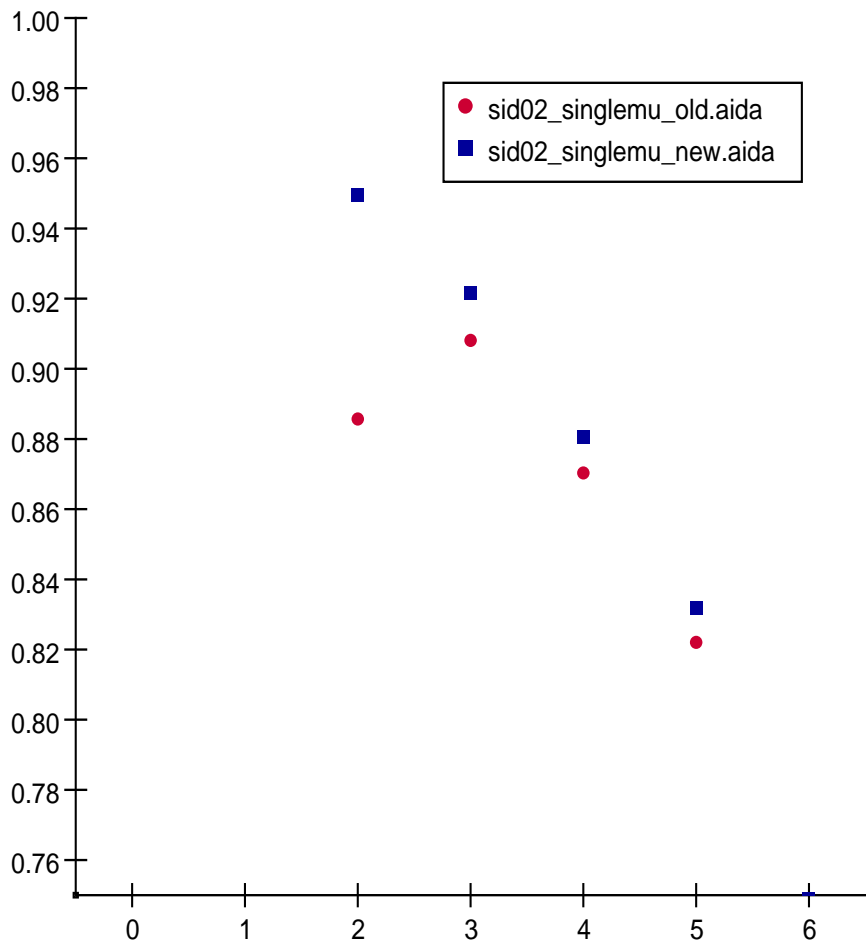


E = 5,10,20,50,100 GeV

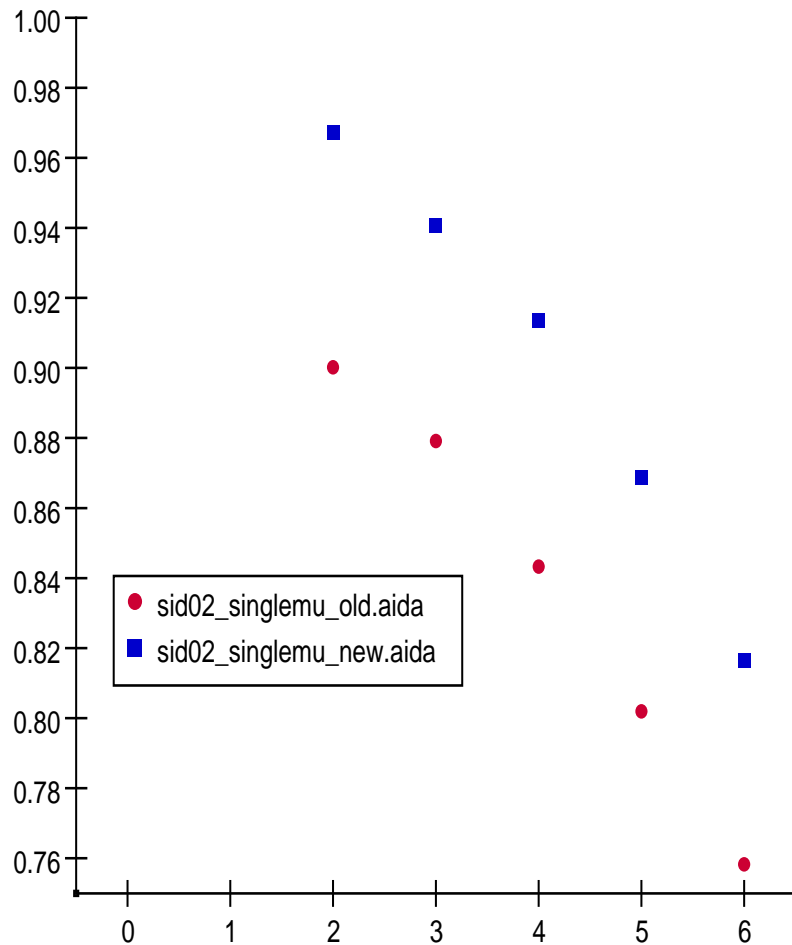
- Also checked muon fake rate, which was 0.1% in both cases.
- Next check single muons.

Efficiency for reconstructing 1 muon and nothing else

0.0<ct<0.8 - eff-1ch only vs Ebin



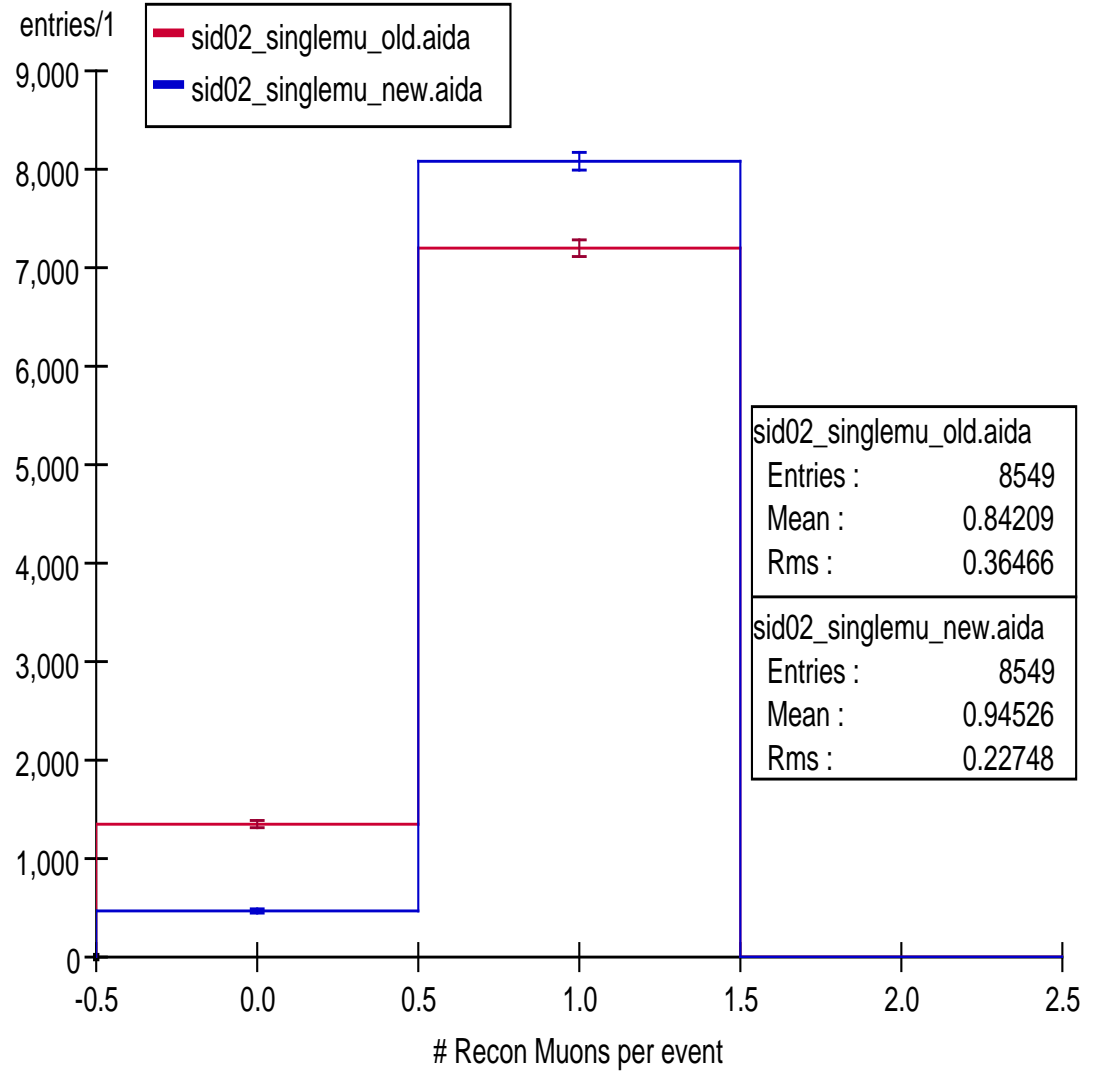
0.8<ct<0.97 - eff-1ch only vs Ebin



E = 5,10,20,50,100 GeV

PDG13 - E=5 - Total # muons

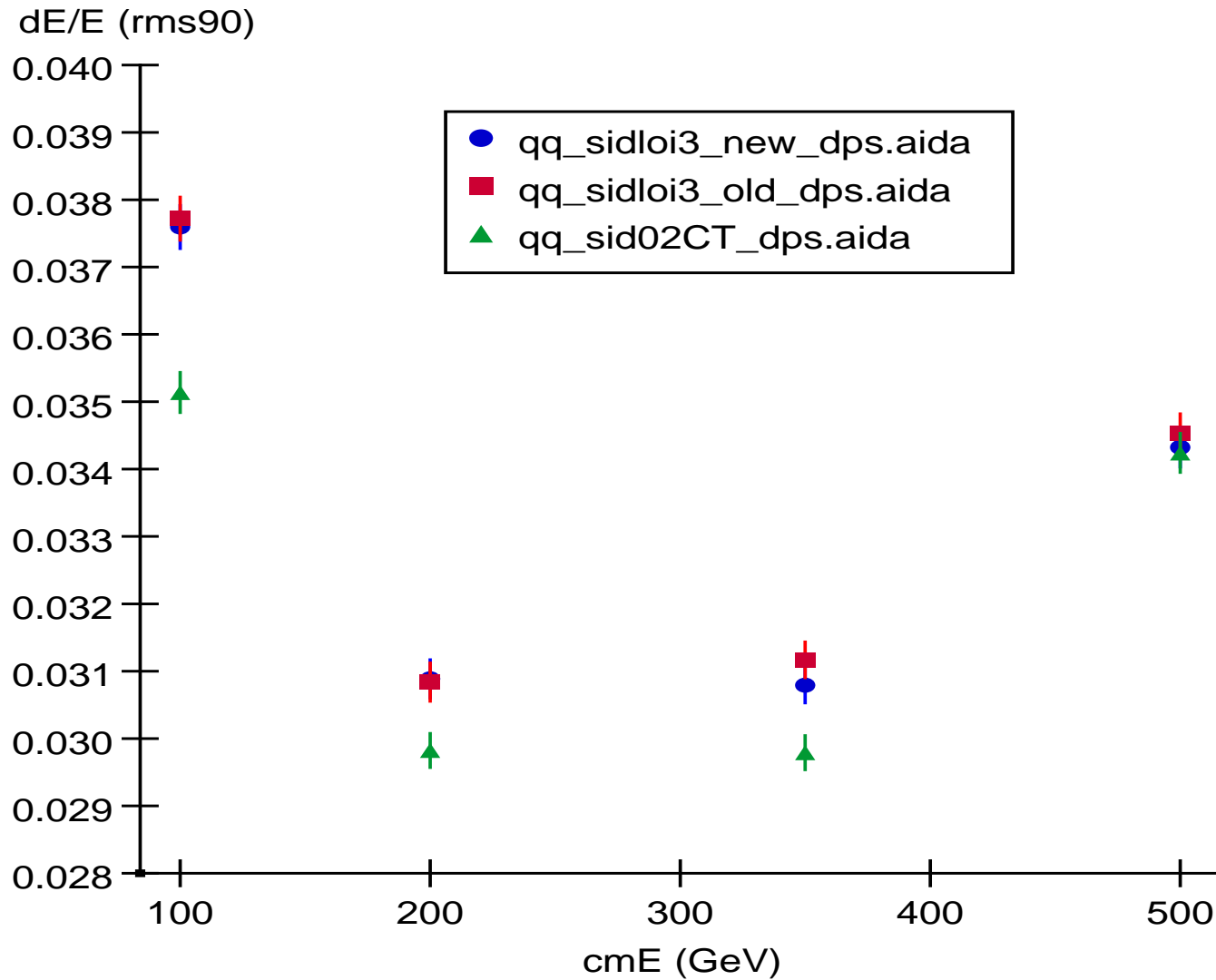
For 5 GeV muons,
identification efficiency
increases from 84% to
95%



sidloi3

- Compare event energy resolution for qq events, using cheat tracking.

ReconstructedParticles:all:dEoE vs cmE



CPU performance

- The combination of ShowerPoint finding and MuonFinder, averaged over all qq events (100,200,350,500 GeV Ecm) :
- Old ~ 19 sec/event
- New ~ .25 sec/event

Conclusions

- New code performs as well or better than old code, significantly faster.
- Has been committed to CVS, usable as an option in ReconDriver(s).