

Weekly report

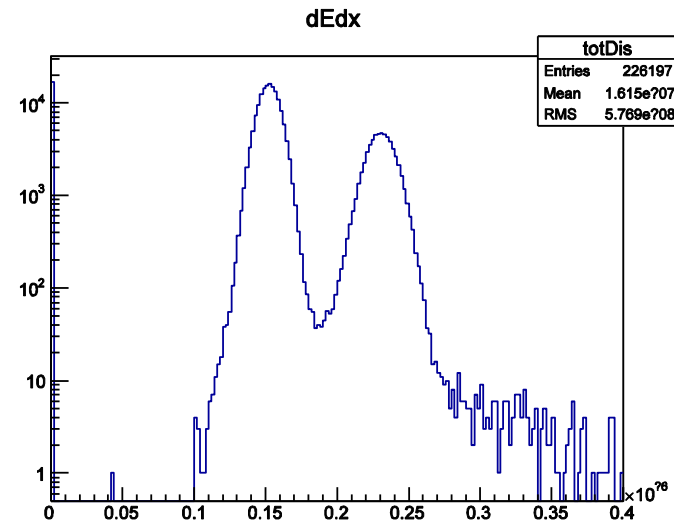
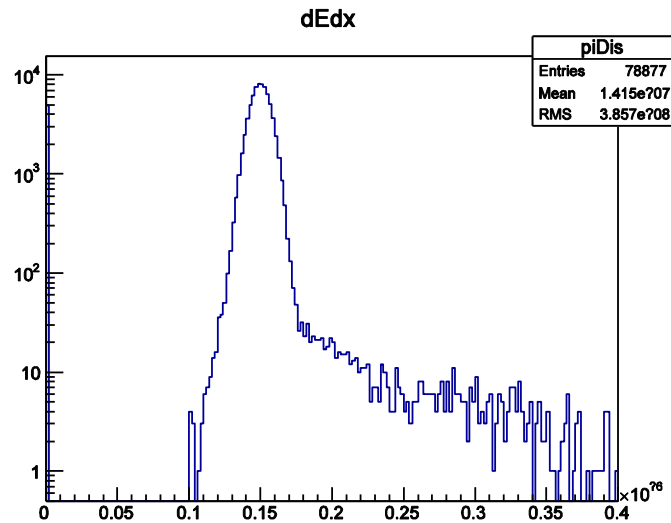
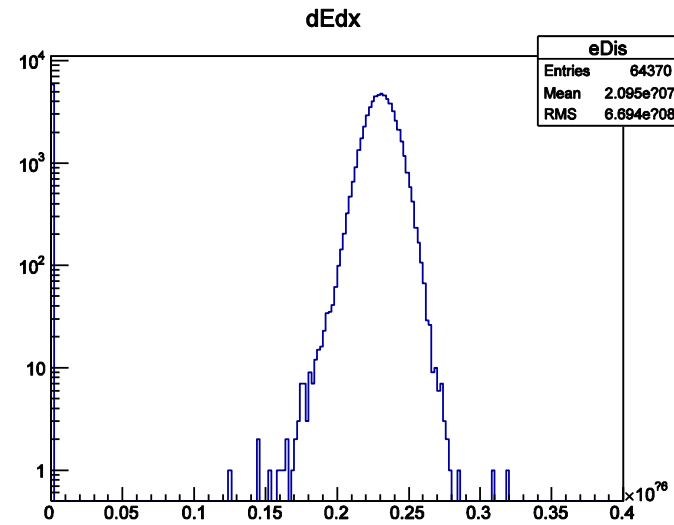
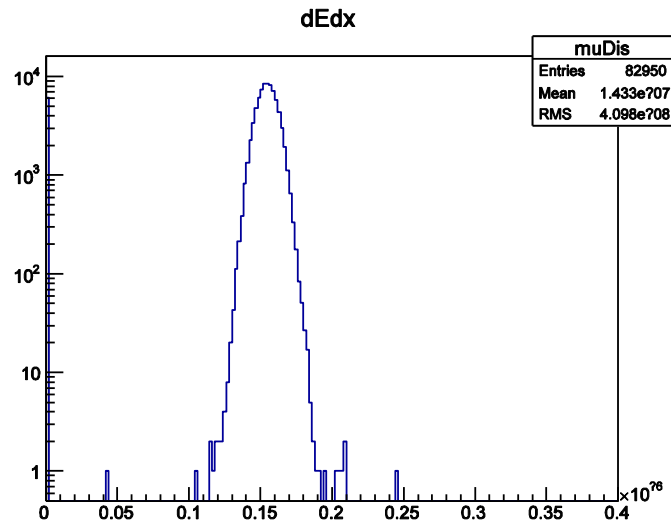
Binsong MA

23/06/2015

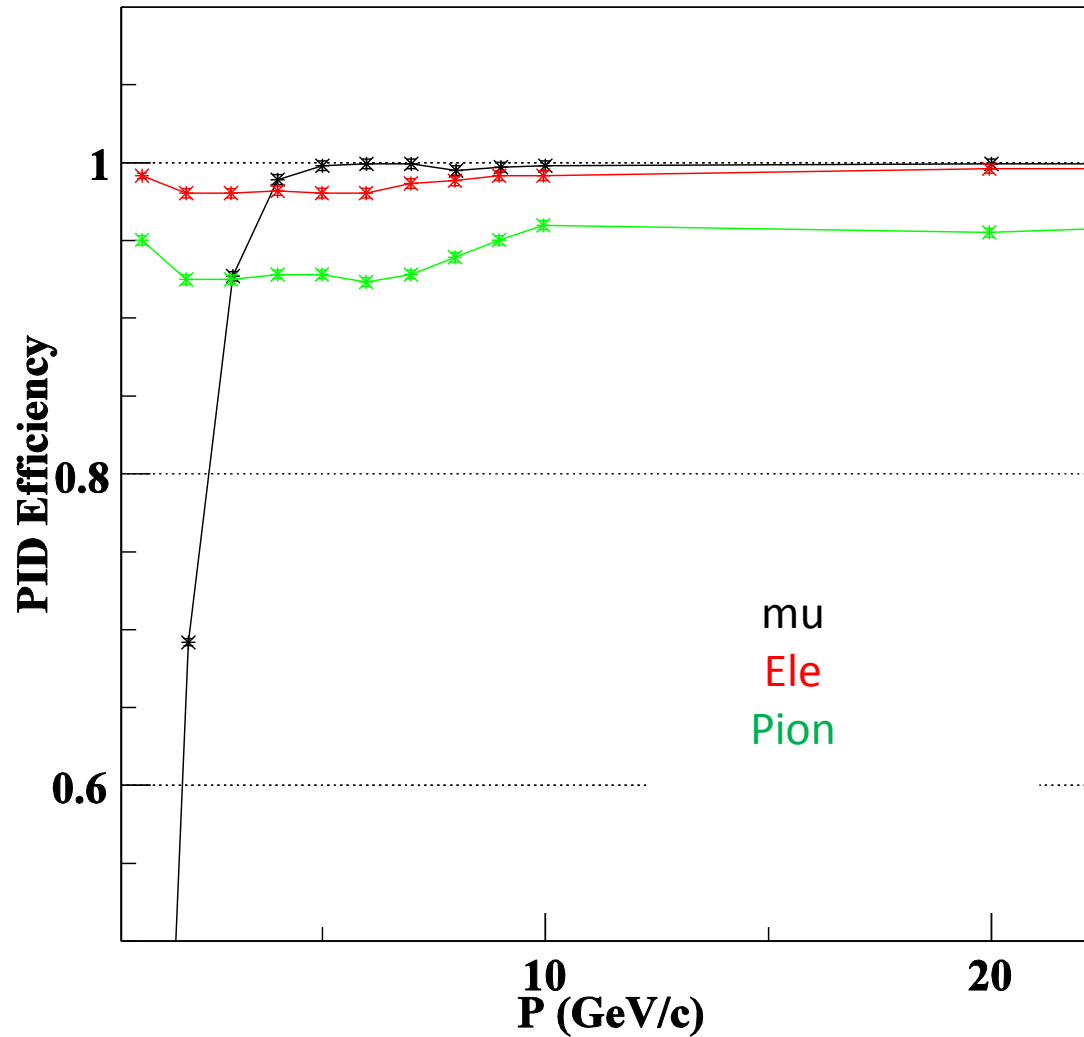
Outlook

- Use dEdx for Electron ID
- Bremsstrahlung photon recovering
- JER with nnH channel

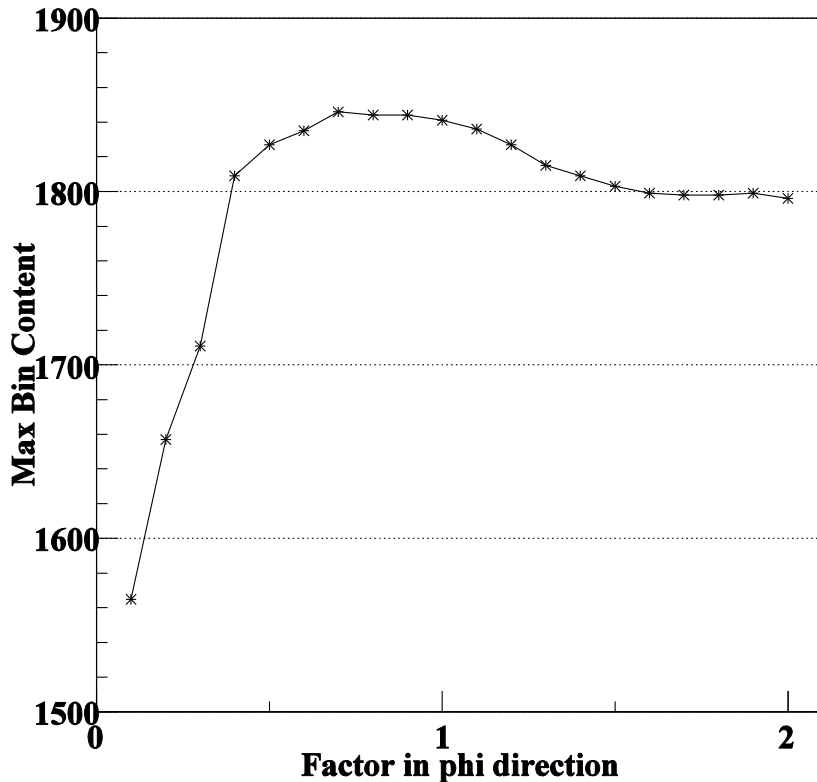
dEdx plot for particles with $E = 1\text{GeV}$



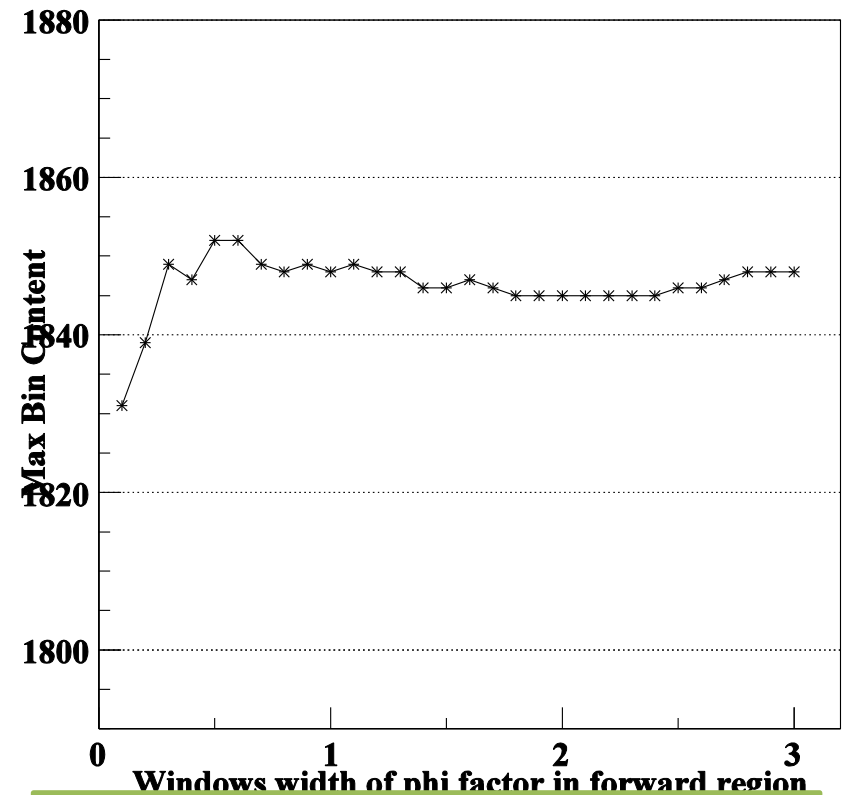
New electron ID performance



Brem recovering phi par scan

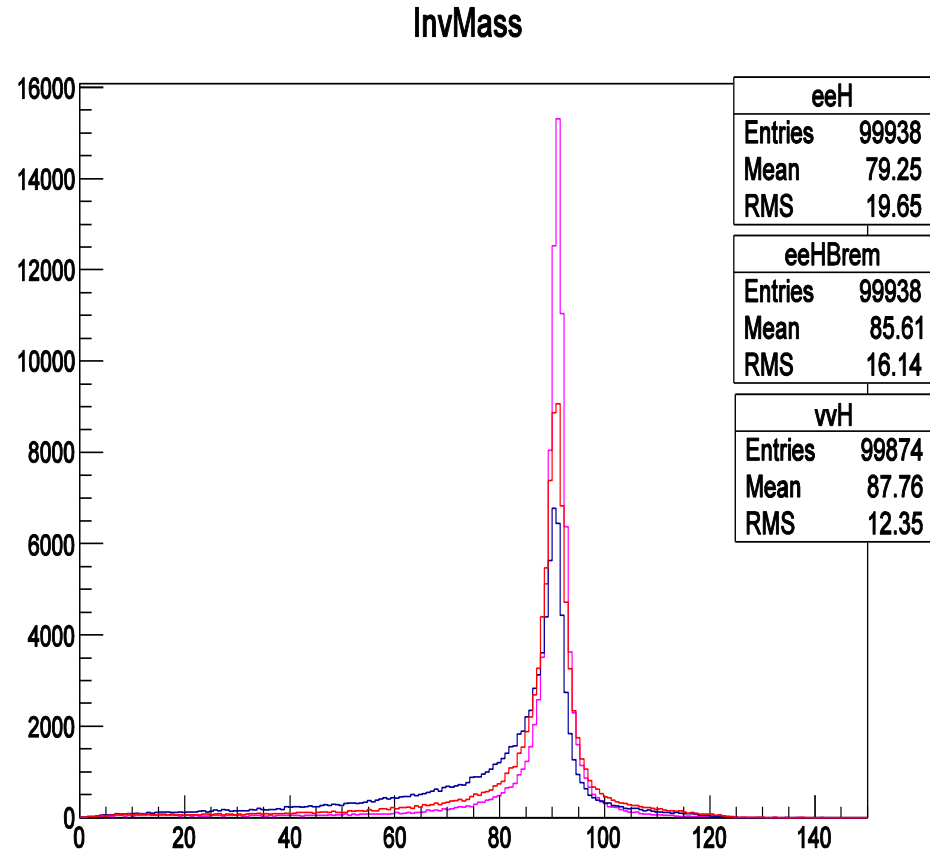
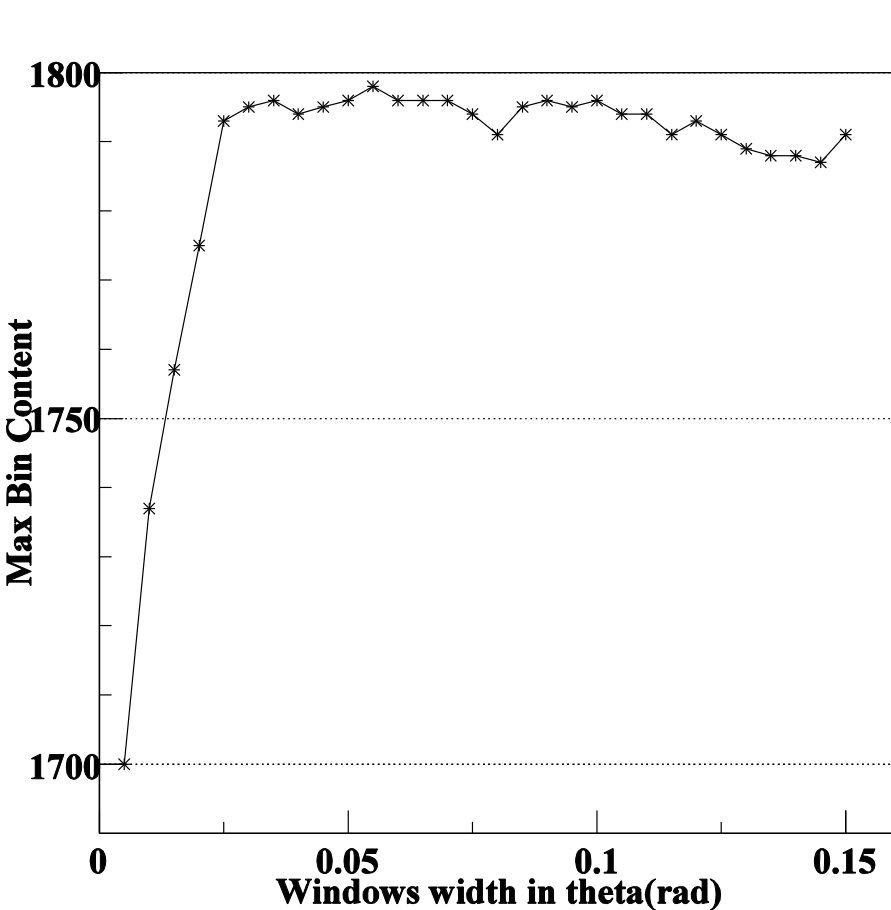


$$\phi_{\text{photonPFO}} - \phi_{\text{ElectronTrk}} < \text{Factor} \\ * \text{asin}(1.808/2/(Pt/(0.3*B))) \\ \text{Factor} = 0.7 \text{ (from the scan)}$$



$$\phi_{\text{photonPFO}} - \phi_{\text{ElectronTrk}} < \text{Factor} \\ * \text{asin}(2.35*Pt/Pz/(Pt/0.3B)) \\ \text{Factor} = 0.6 \text{ (from the scan)}$$

Brem recovering theta par scan



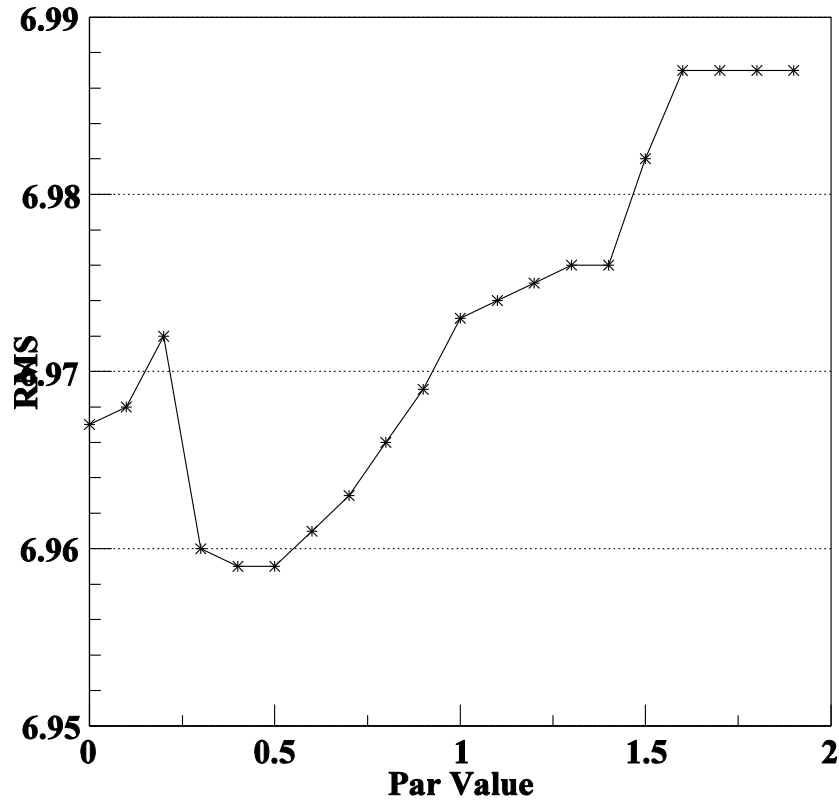
$-0.055\text{rad} < \theta_{\text{photonPFO}} - \theta_{\text{ElectronTrk}} < 0.055\text{rad}$
(from the scan)

Works for the JER with nnH signal

- Scan some hand put parameters to optimize the JER
 - flagEnergyFlow
 - Tight candidates selection in cluster merging
 $(E + \text{Factor} * \sqrt{E} + 1)$

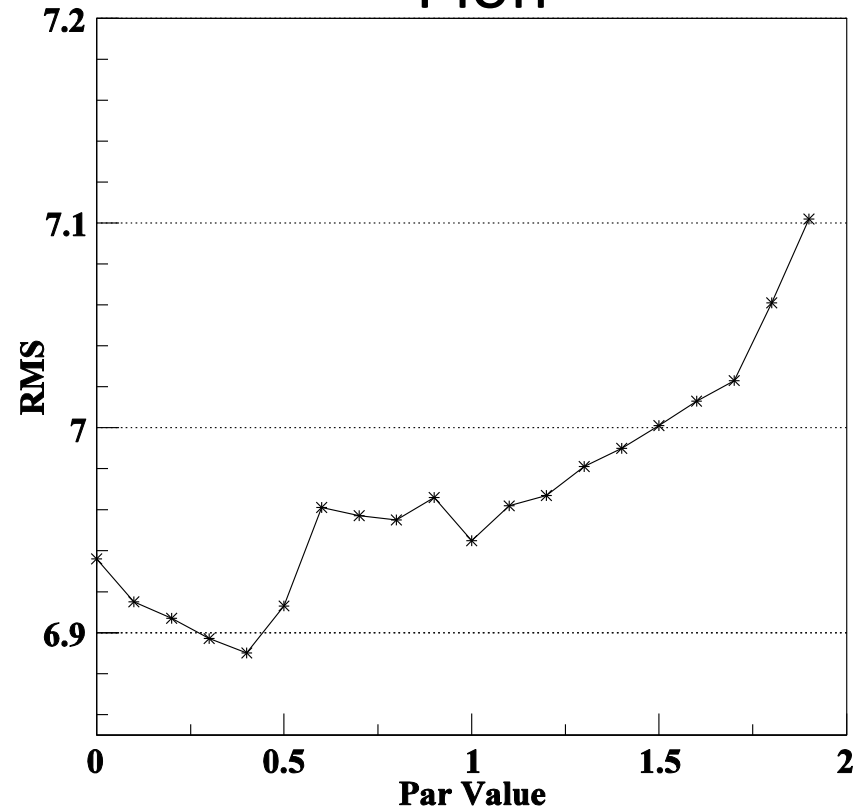
flagEnergyFlow

electron



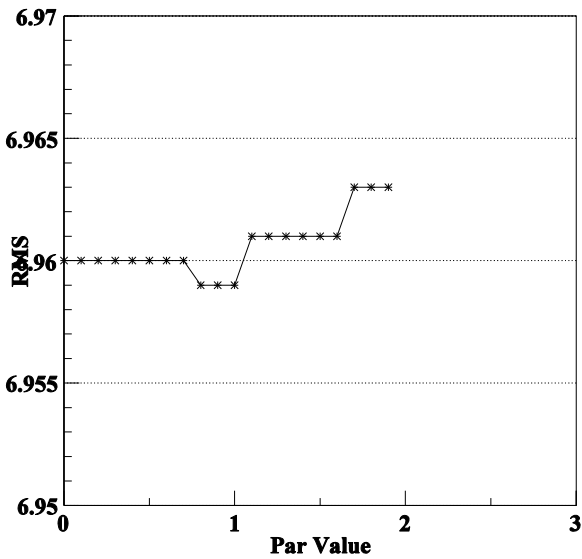
Optimized Factor: 0.5
In Bushconnect: 0.5

Pion

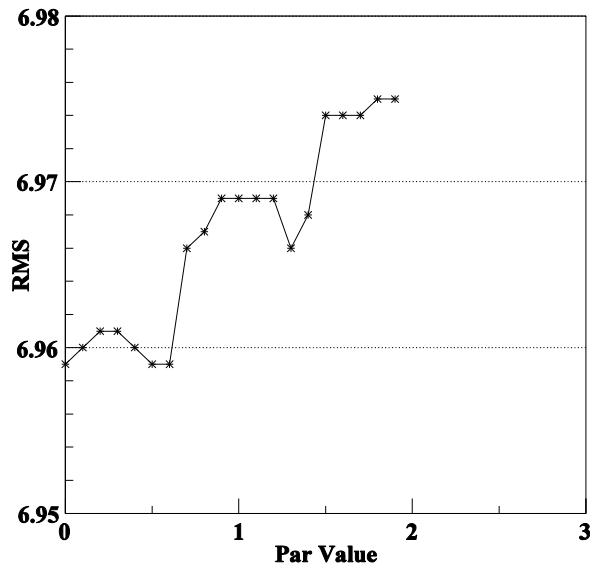


Optimized Factor: 0.4
In Bushconnect: 1.2

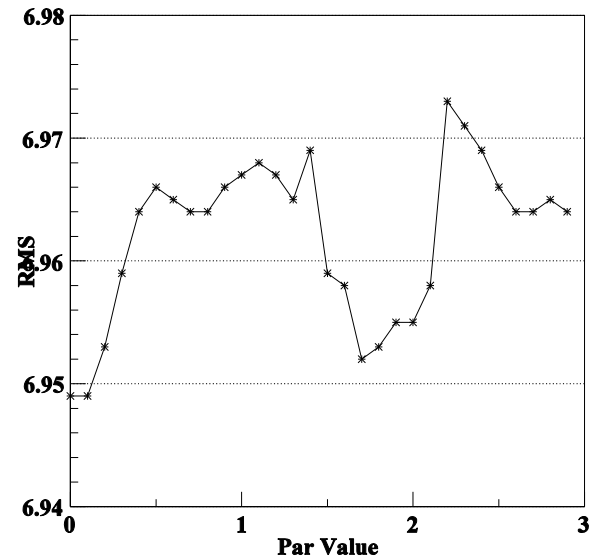
Tight candidates selection



Optimized Factor: 1.0
In Bushconnect: 1.0



Optimized Factor: 0.5
In Bushconnect: 0.5



Optimized Factor: 1.7
In Bushconnect: 1.5

JER Conclusion

- With these optimizations, the JER can be improved from 6.96 to 6.89 (for 1000 events)