Neutrino Beam Composition - II

Appendix to **Neutrino Beam Composition - I.**

The following plots show the ν_μCC sample distribrutions for some important parameters.

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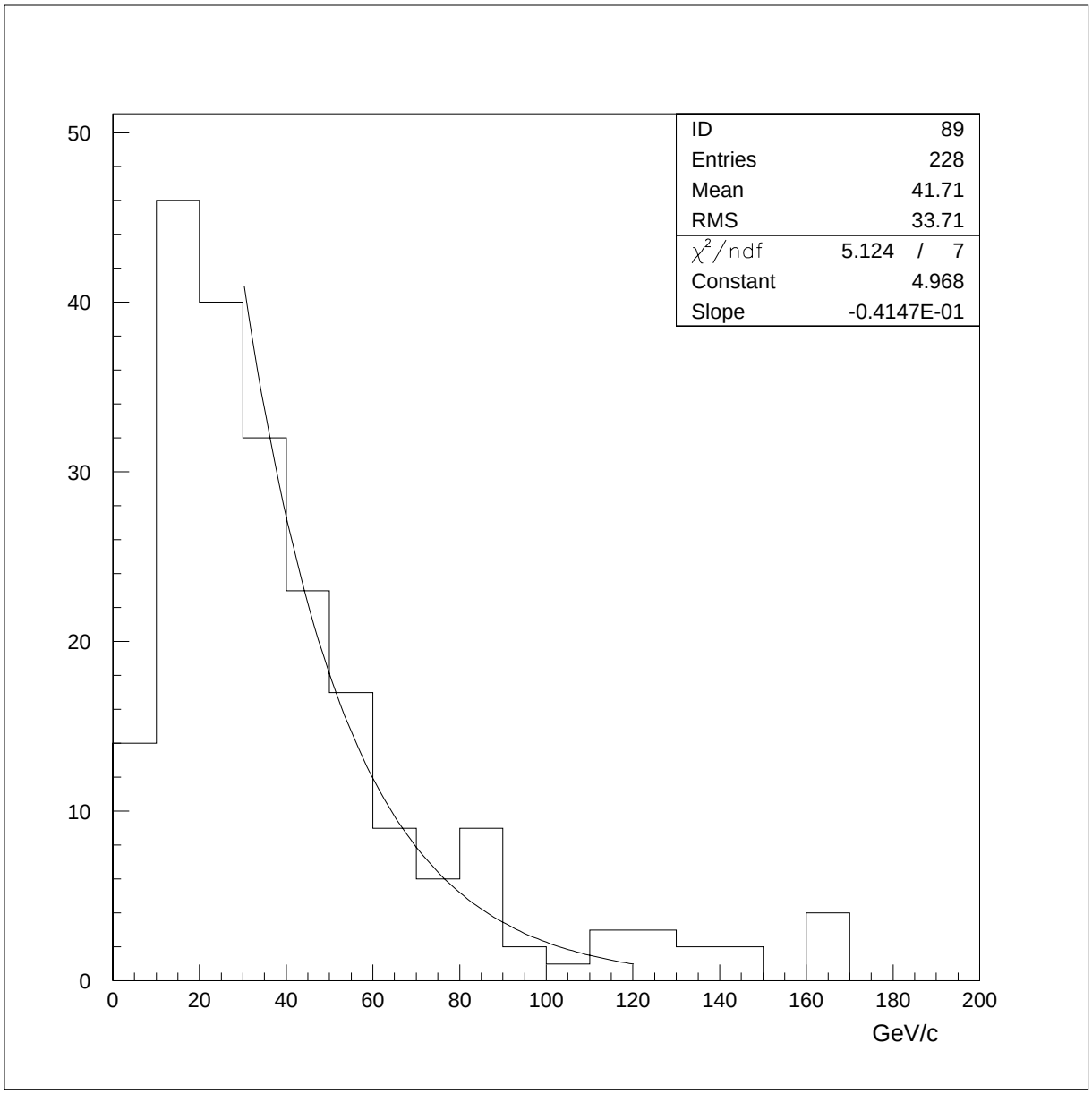
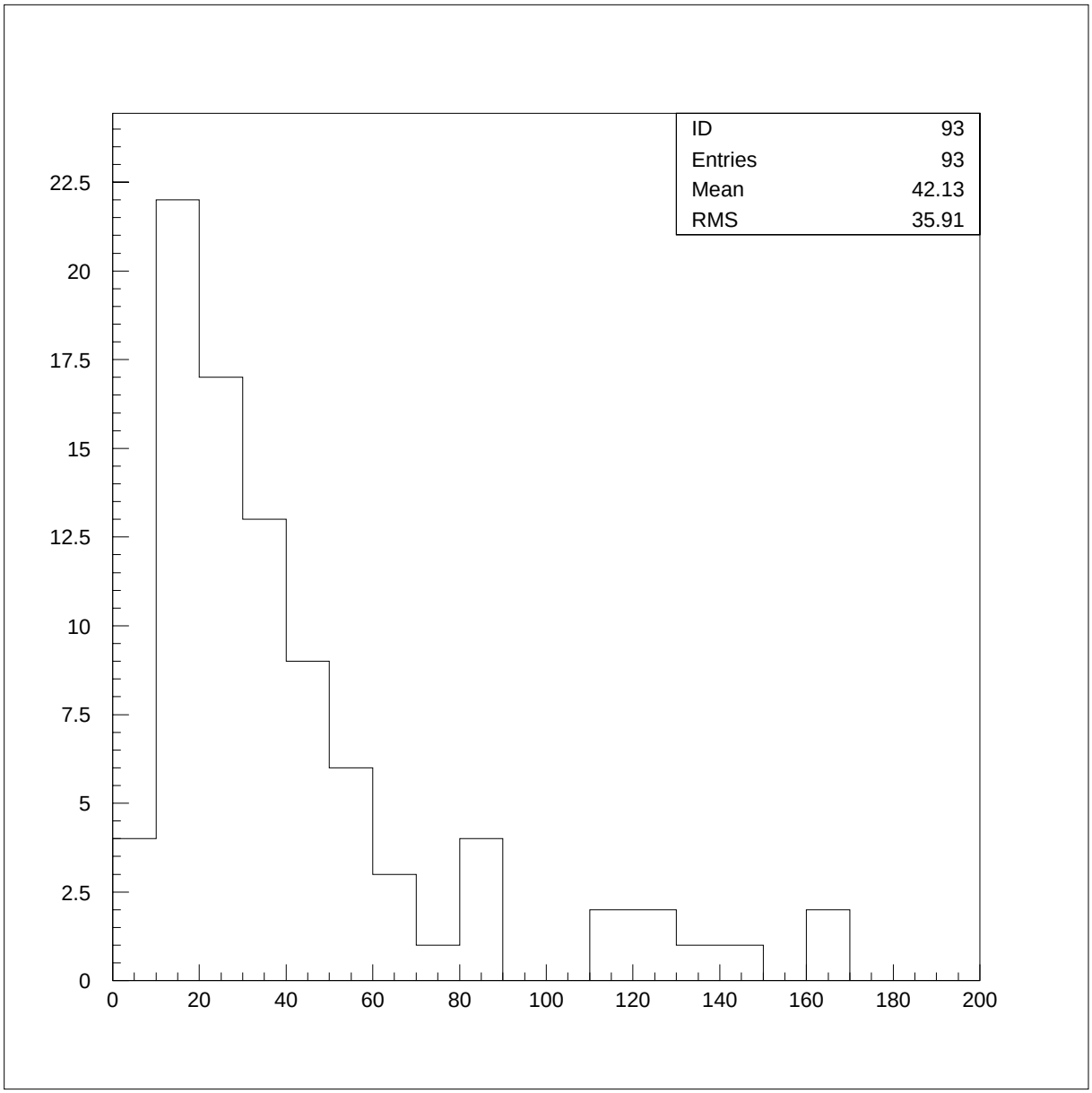


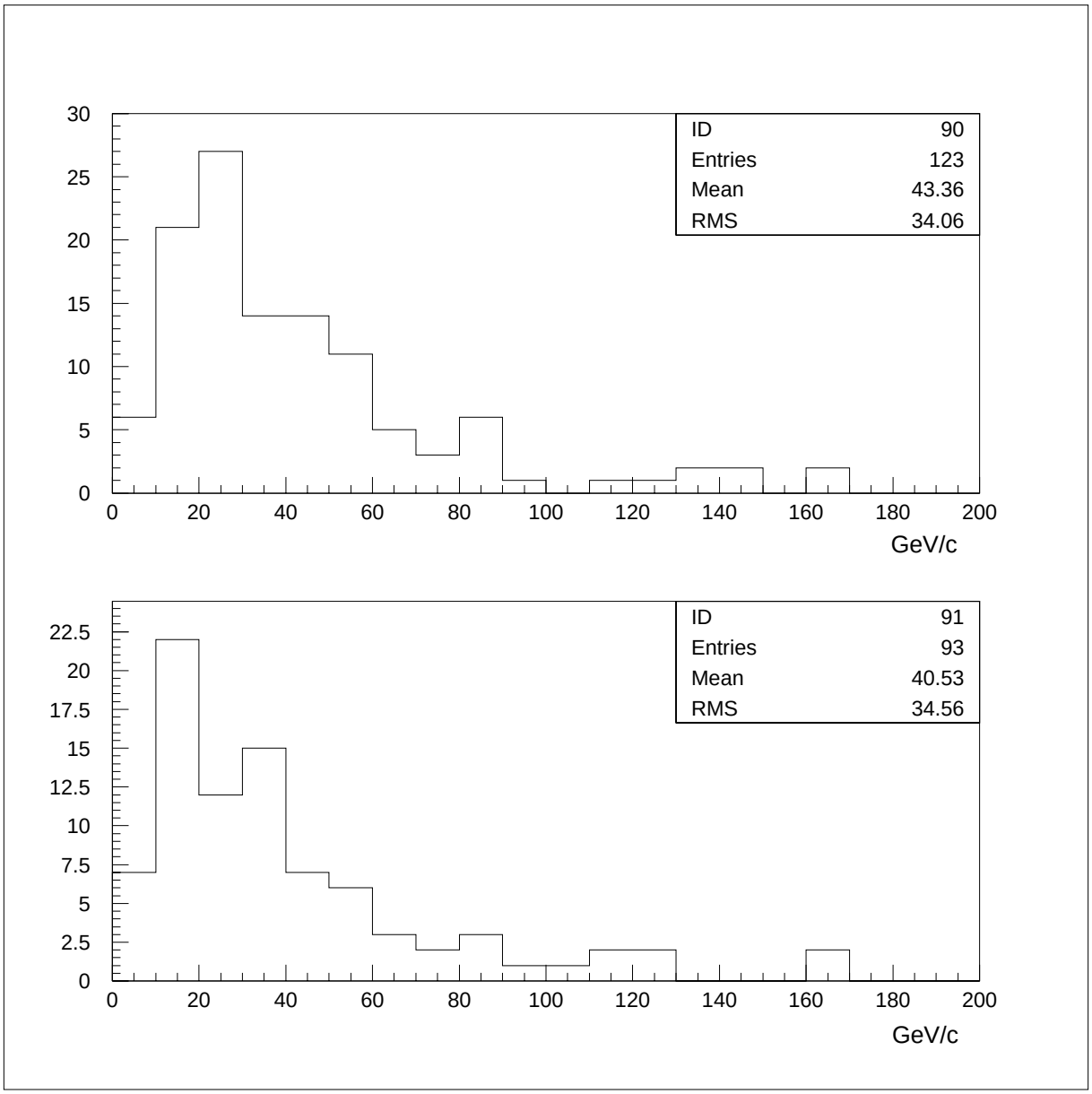
1. Muon spectrum, Period 3 and 4

The spectrum from all ν_μCC events from Period 3 and Period 4. The dashed line is a fit of an exponential function to data for p_μ>30 GeV/*c*.



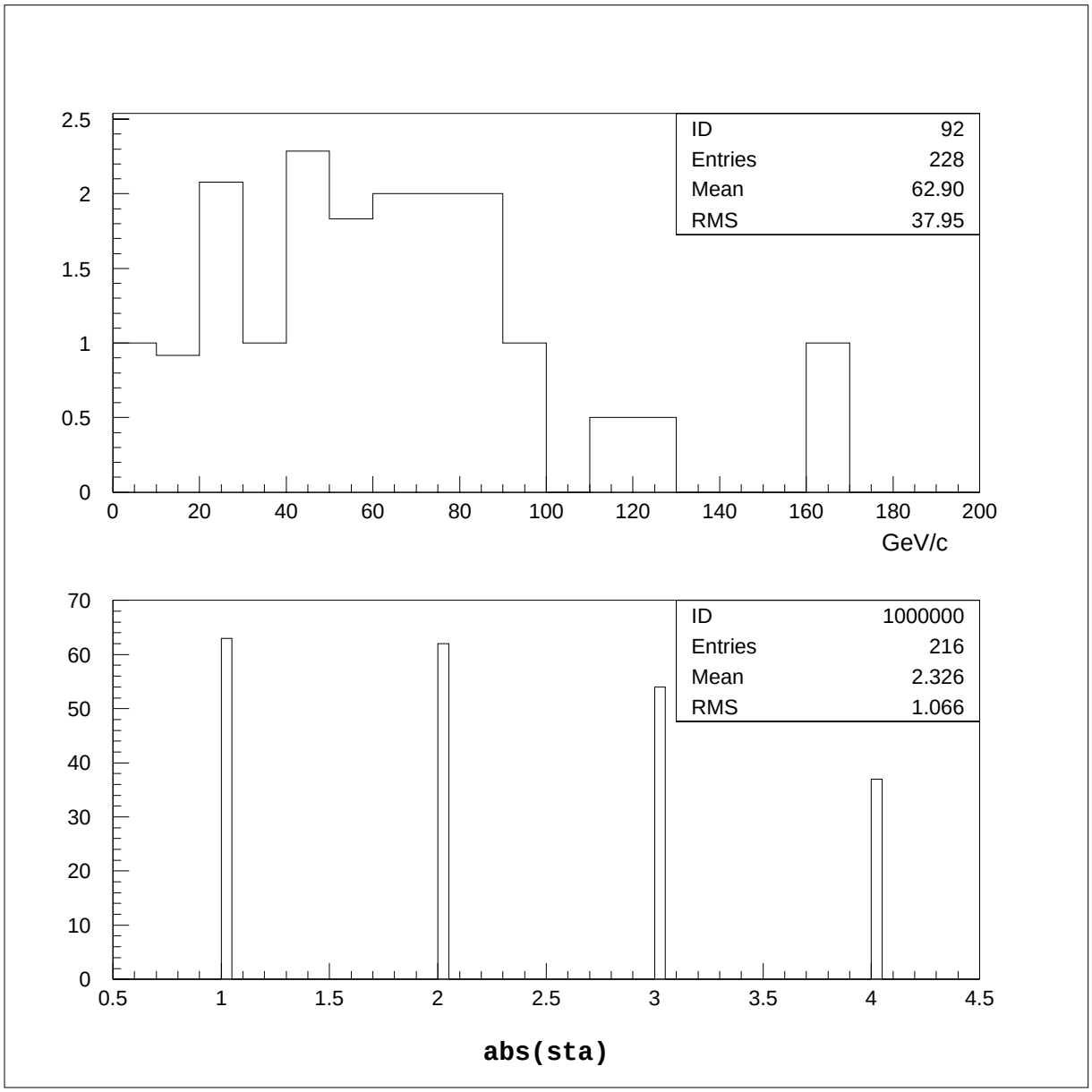
2. Muon Spectrum for located events

The spectrum of muons for all events located in the emulsion. For this sample the ratio μ^-/μ^+ is 55/38 = 1.45.



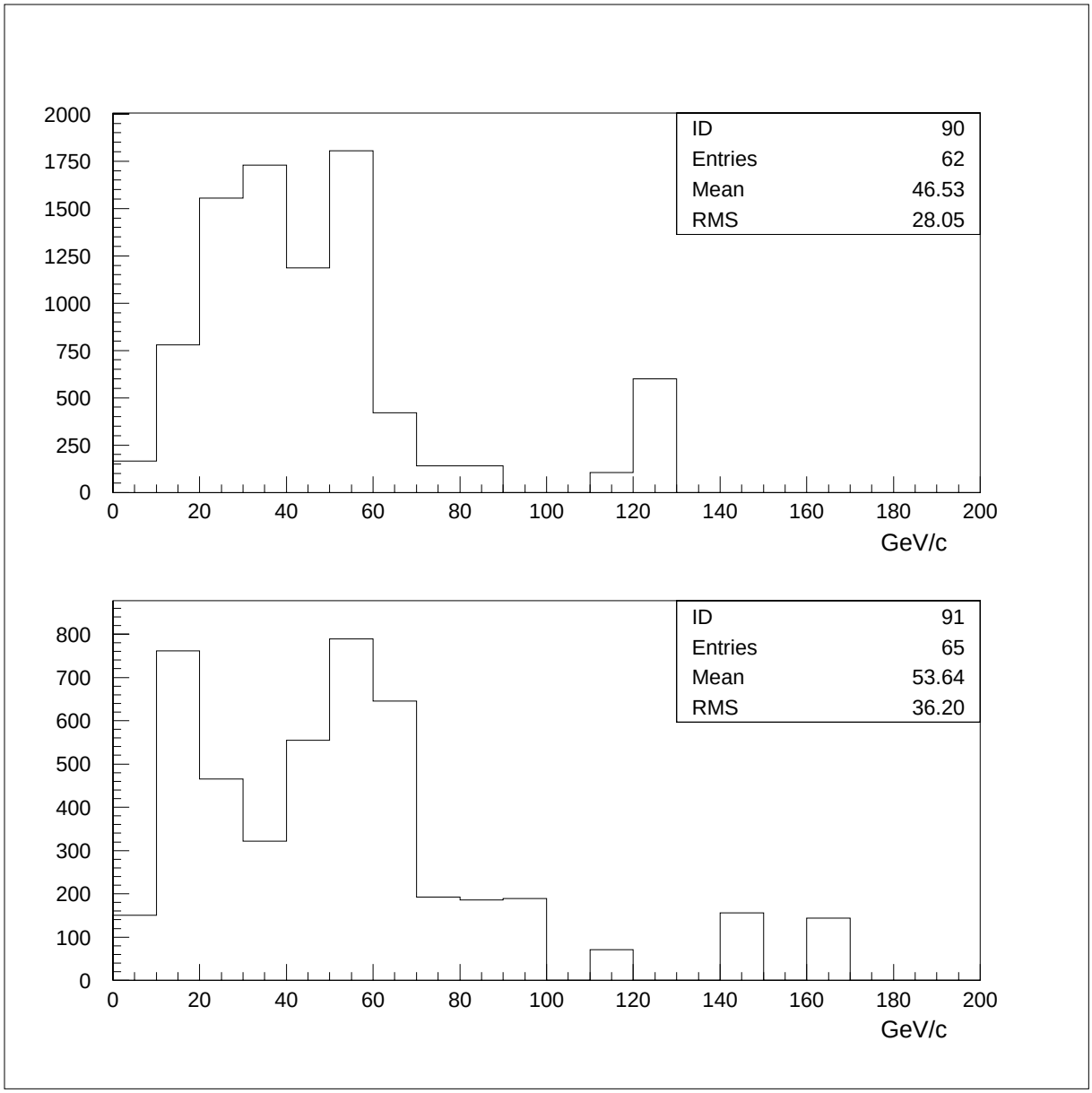
3. Muon Spectrum: Charge Separated

The ν_μCC divided into μ^- data (*top*) and μ^+ data (*bottom*)



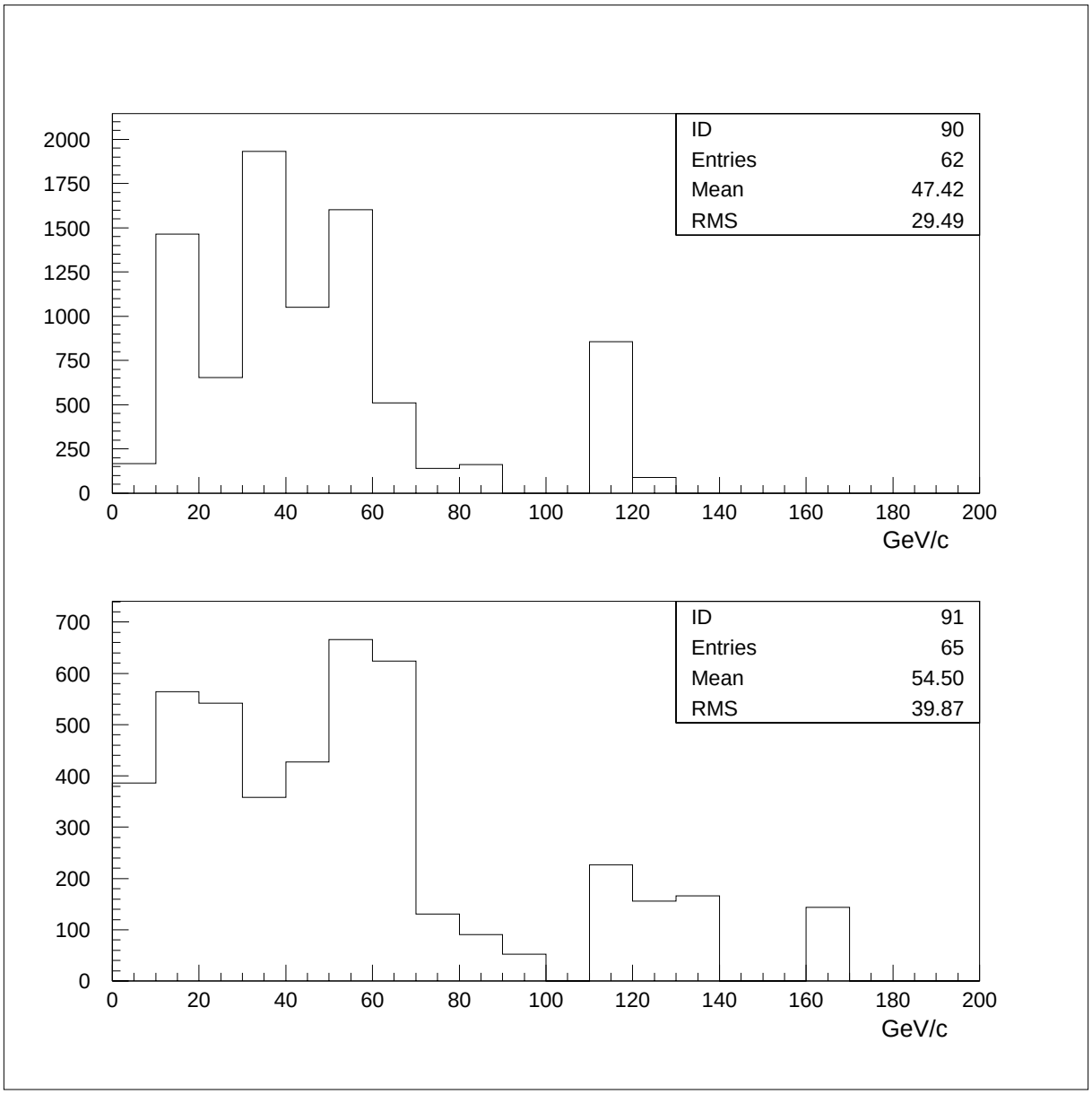
4. Muons: Neg/Pos ratio

The ratio of μ^-/μ^+ (*top*) as a function of p_μ and the number of events in each station (*bottom*). The momentum averaged ratio of μ^-/μ^+ in the data is 1.51±0.19 (stat).



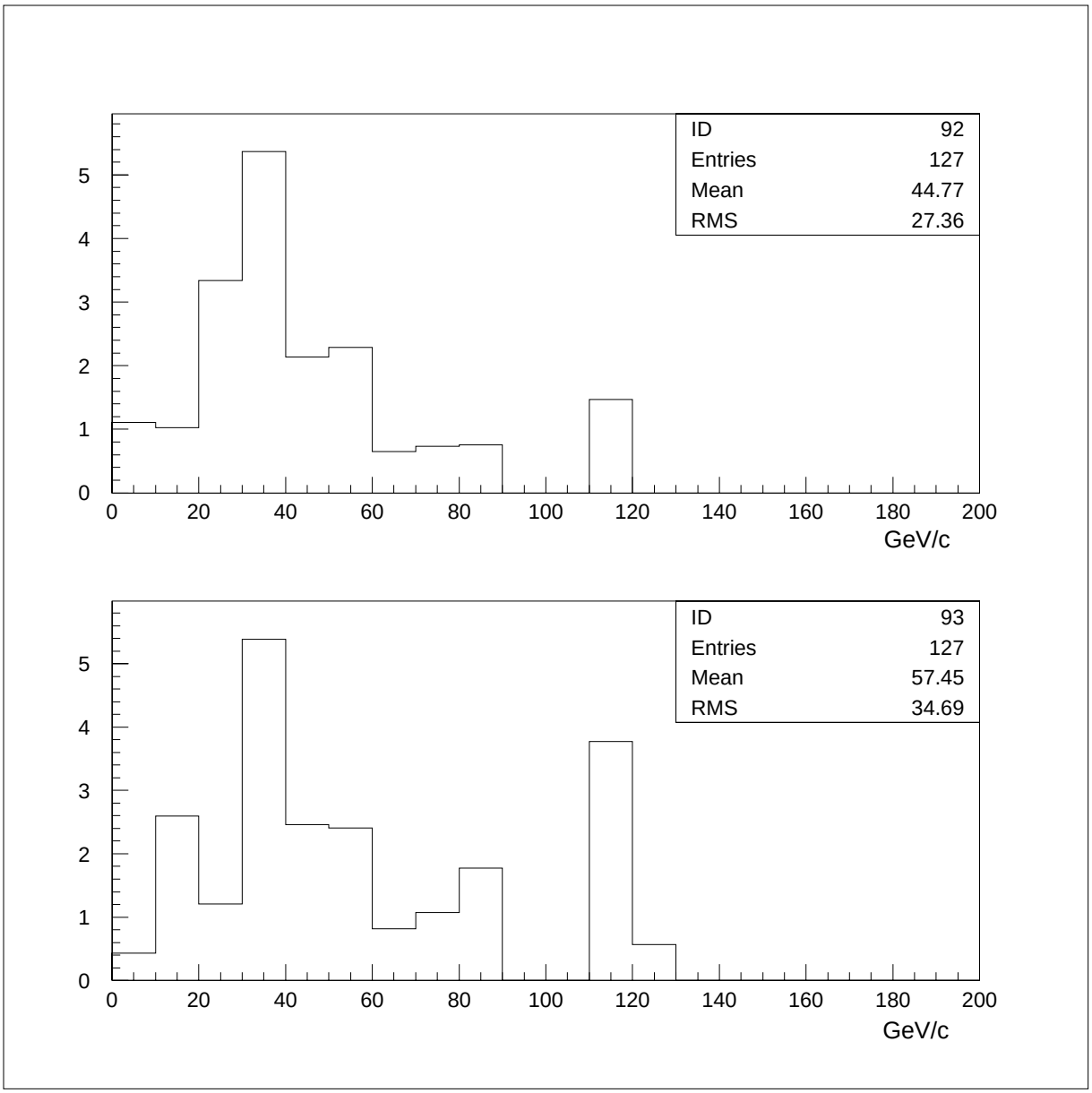
5. MC Muon Spectra

Monte Carlo ν_μCC events divided into samples: μ^- (*top*) and μ^+ (*bottom*).



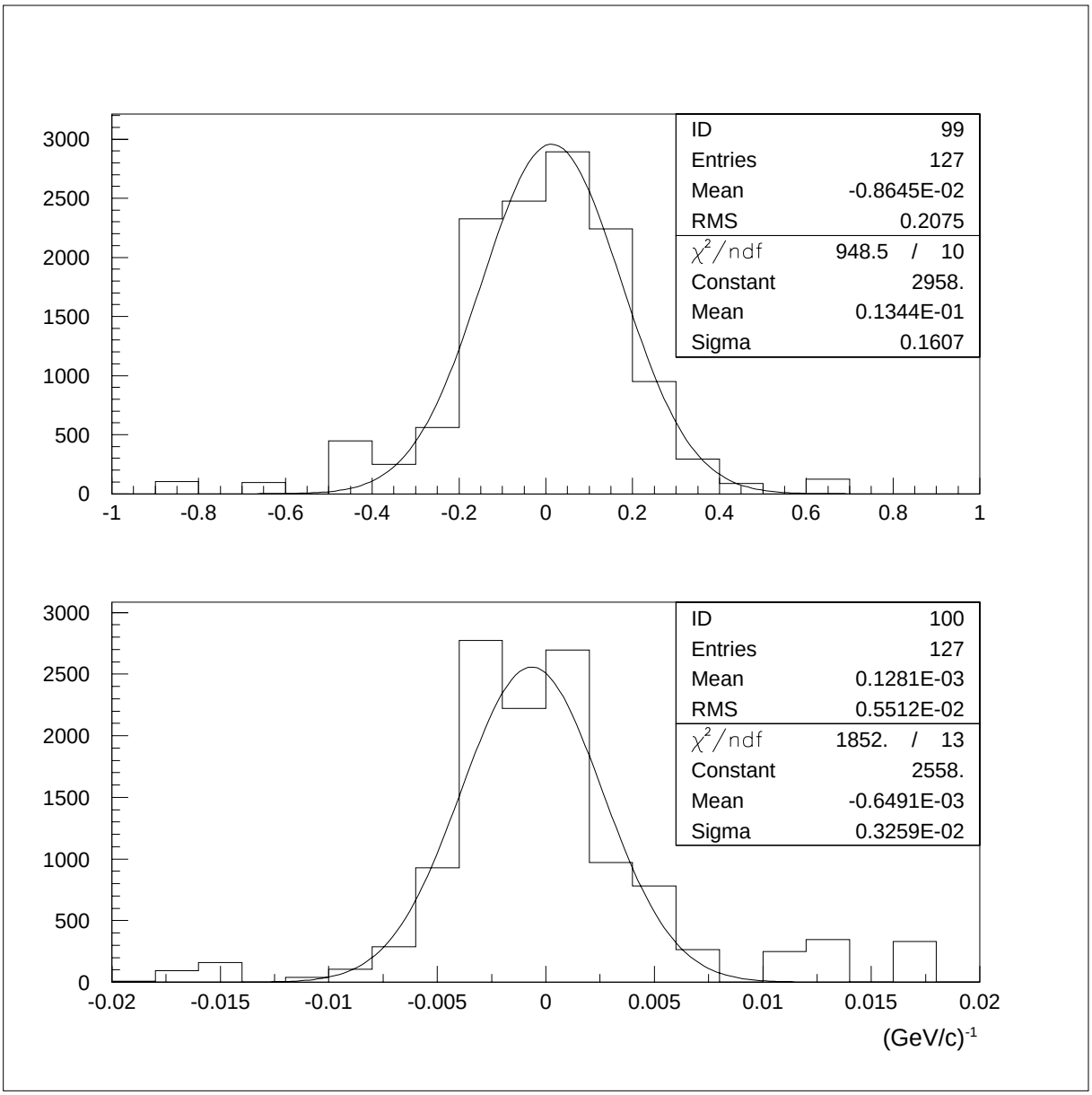
6. MC Muons: Reconstructed Spectra

Monte Carlo ν_μCC events showing the reconstructed momentum distribution divided into the μ^+ sample (*top*) and μ^- sample (*bottom*).



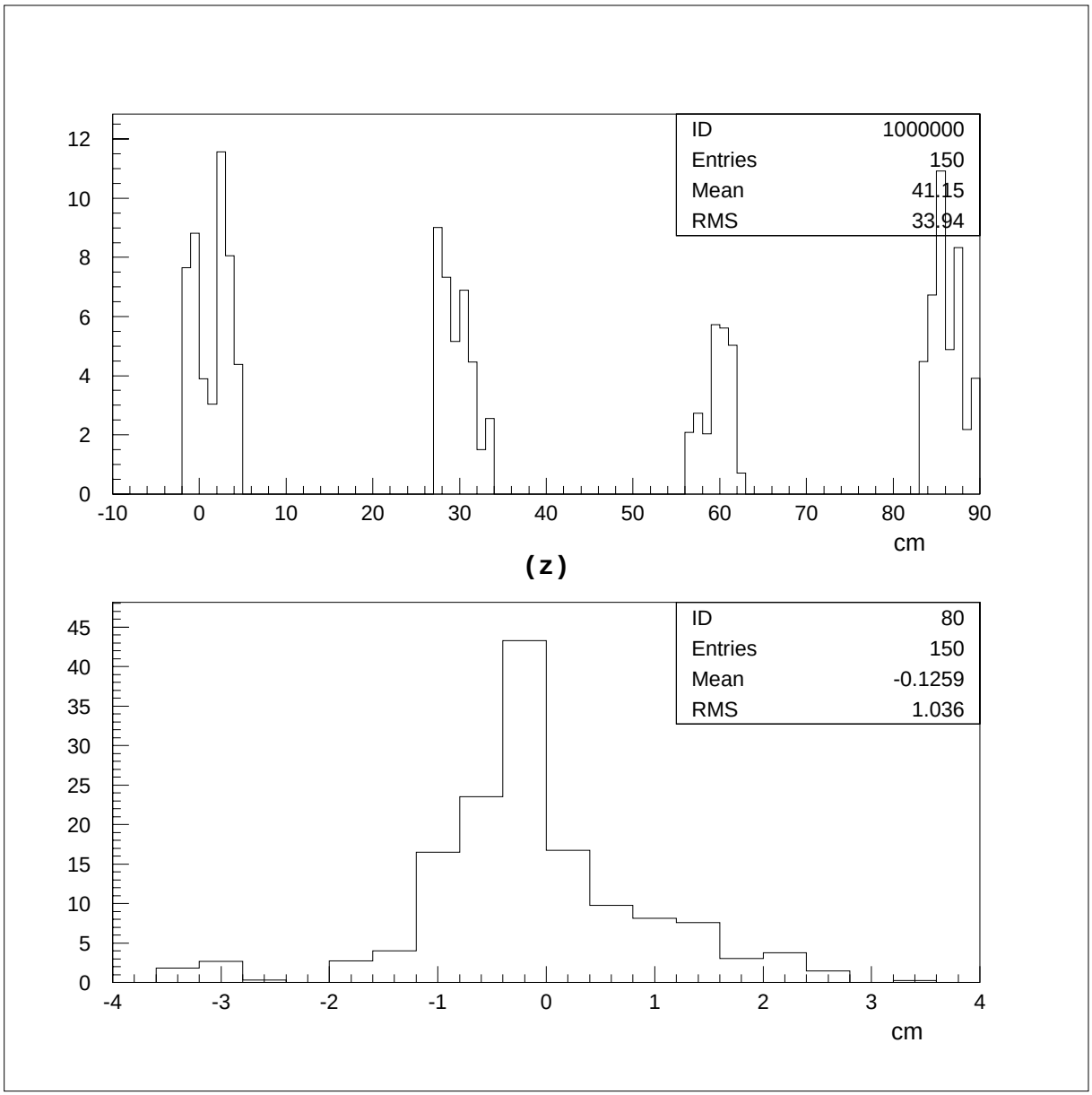
7. MC Muons: Ratio Neg/Pos

Monte Carlo ν_μCC events showing the ratio μ^-/μ^+ as a function of p_μ for the input data (*top*) and reconstructed data (*bottom*). The momentum averaged ratio of μ^-/μ^+ in the MC data is 1.79±0.17 (stat).



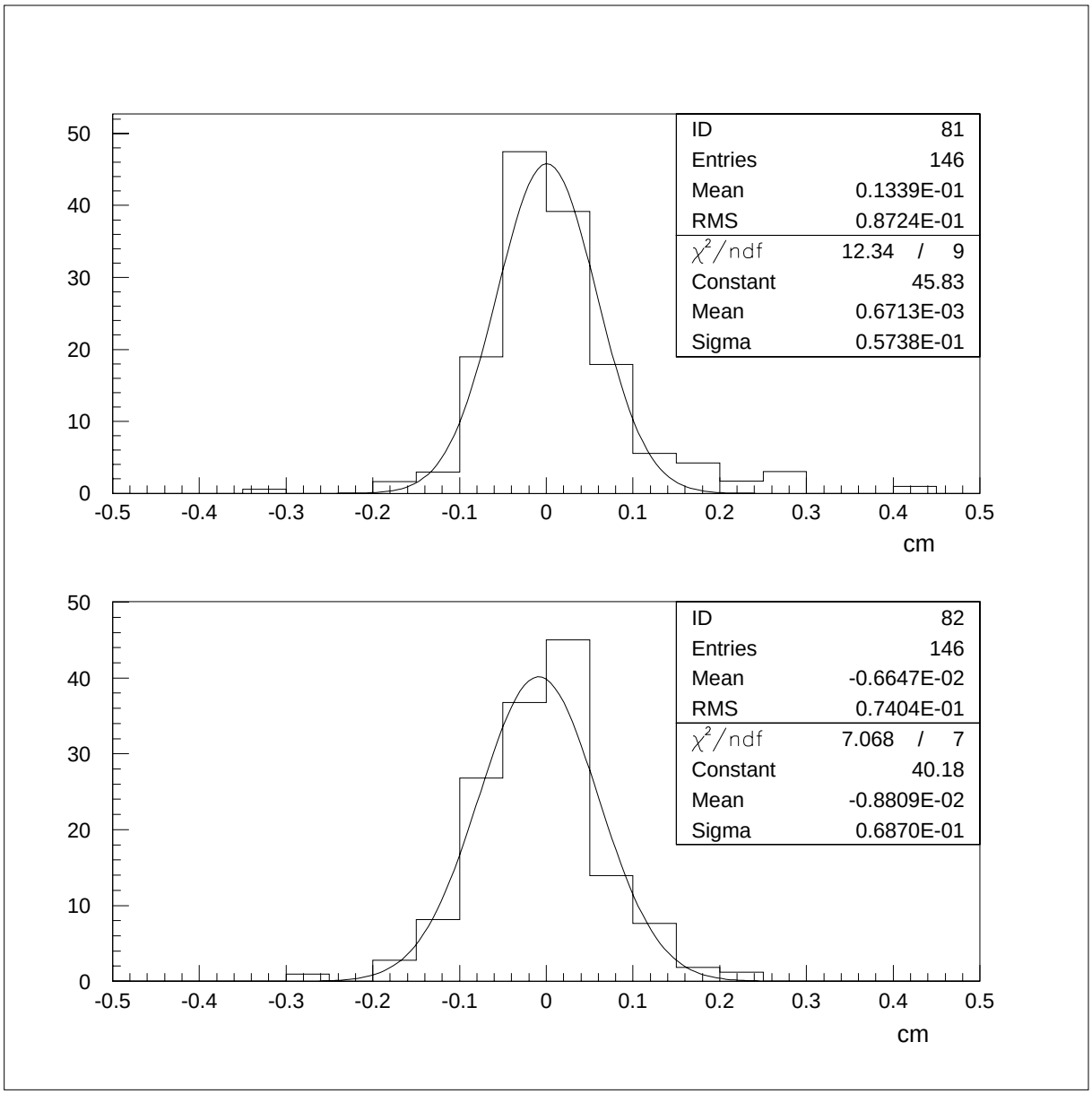
8. MC Muon Momentum Resolution

Monte Carlo reconstructed muon tracks showing the resolution in momentum, the relative error in p_μ (*top*) and resolution in $1/p_\mu$ (*bottom*). The momentum resolution is about 15%.



9. MC Vertex Resolution: z

Monte Carlo reconstructed vertices in ν_μCC interactions showing the distribution in z (*top*) and the resolution, $\delta z = z_{recon} - z_{MC}$ (*bottom*).



10. MC Vertex Resolution: u and v

Monte Carlo reconstructed vertex resolutions, δu (*top*) and δv (*bottom*).