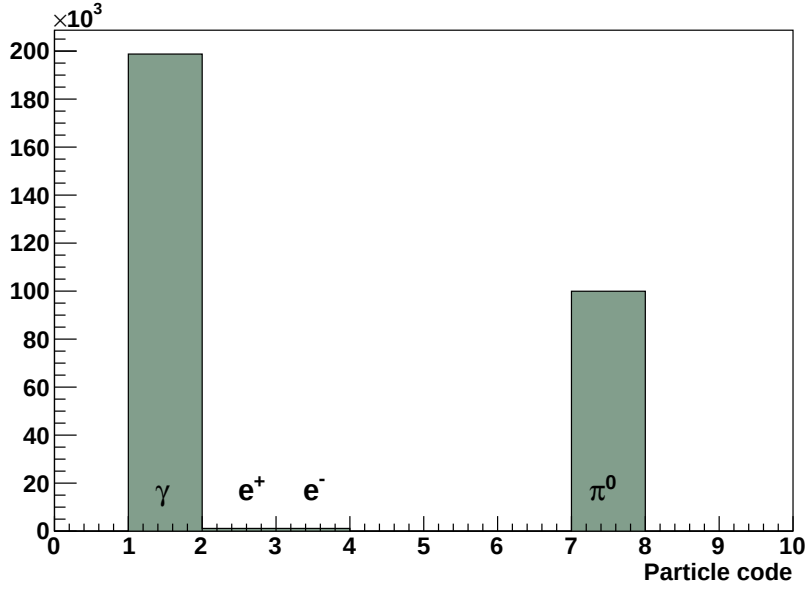
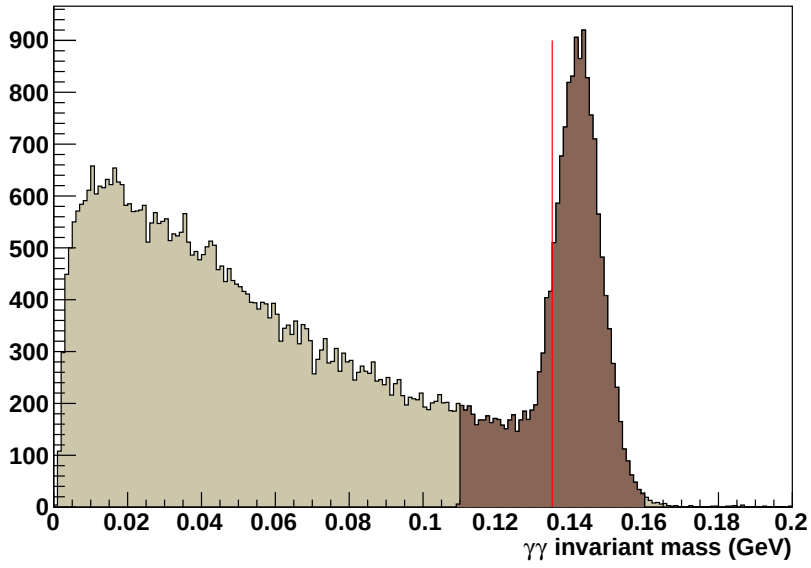
π^0 acceptance of the GlueX detector, Pb target, 0.028 cm thick, Z_0=65 cm, Z-shift=-64 cm

Alexander Mushkarenkov

April 11, 2013

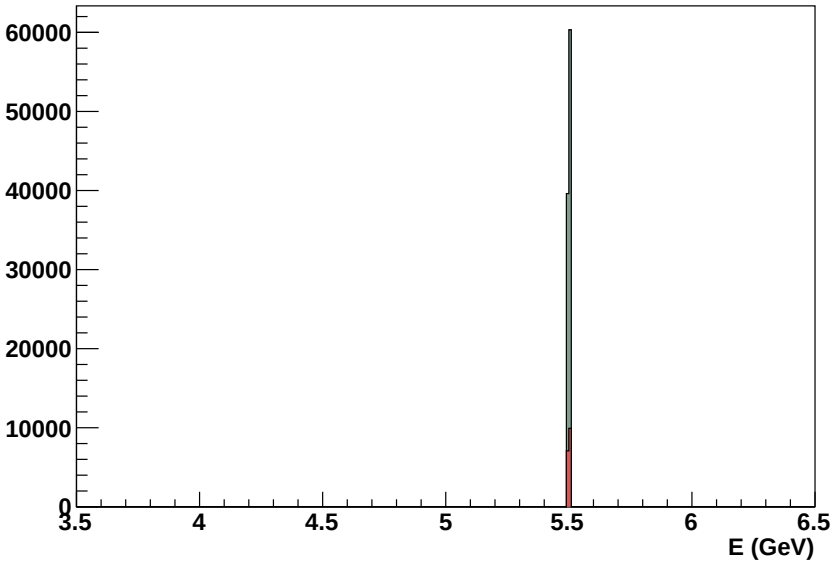
Generated and reconstructed π^0

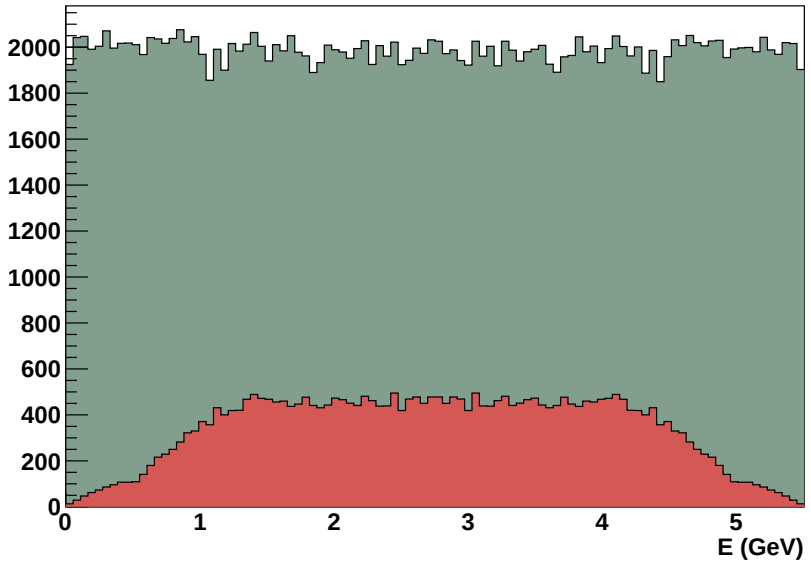


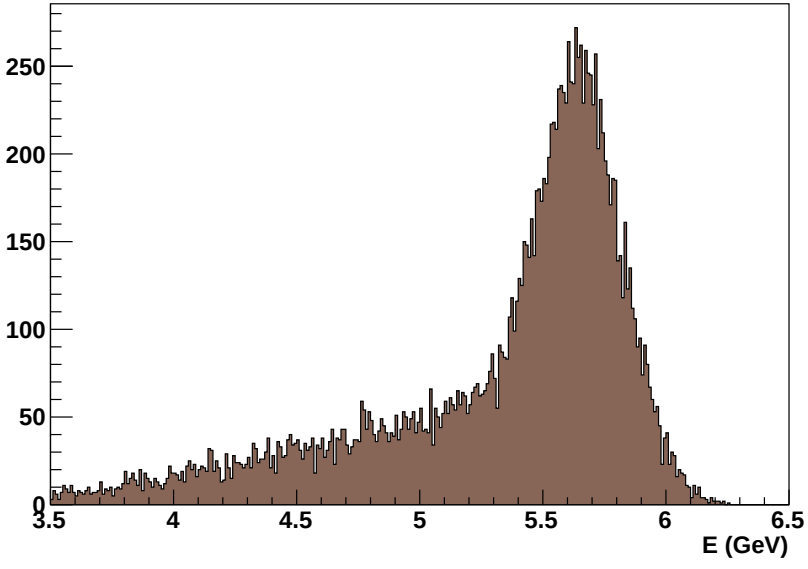


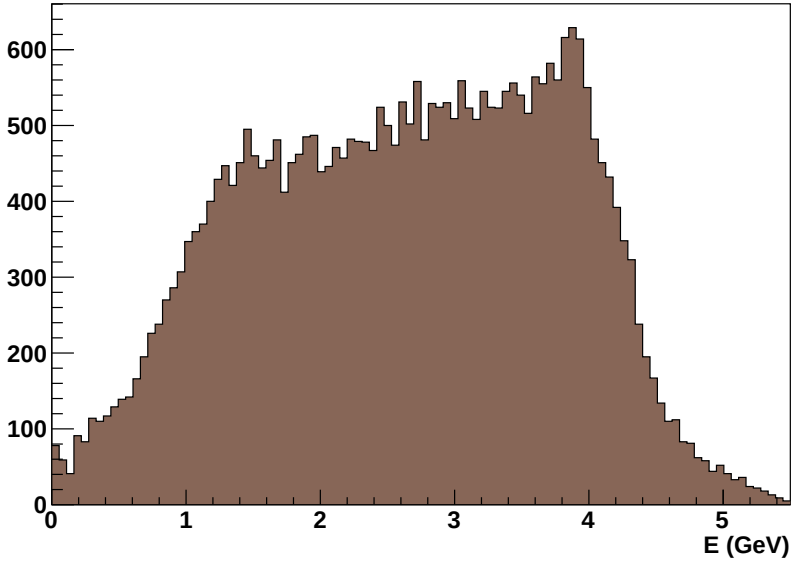
- $\pi^0 \to \gamma\gamma \approx 98.8$ %, $\pi^0 \to \gamma e^+ e^- \approx 1.17$ %;
- Pb target, 0.028 cm thick, Z_0=65 cm, Z-shift=-64 cm;
- The start counter removed;
- only the "Gamma" hypotheses were used (DKinematicData::t1_detector() returns SYS_FCAL);
- if > 2 "Gamma" hypotheses in a event then a pair producing the minimal $d = |m_{\gamma\gamma} - m_{\pi^0}|$ were selected;
- $|m_{\gamma\gamma} - m_{\pi^0}| < 0.025$ GeV.

Generated and reconstructed energy of π^0 and γ

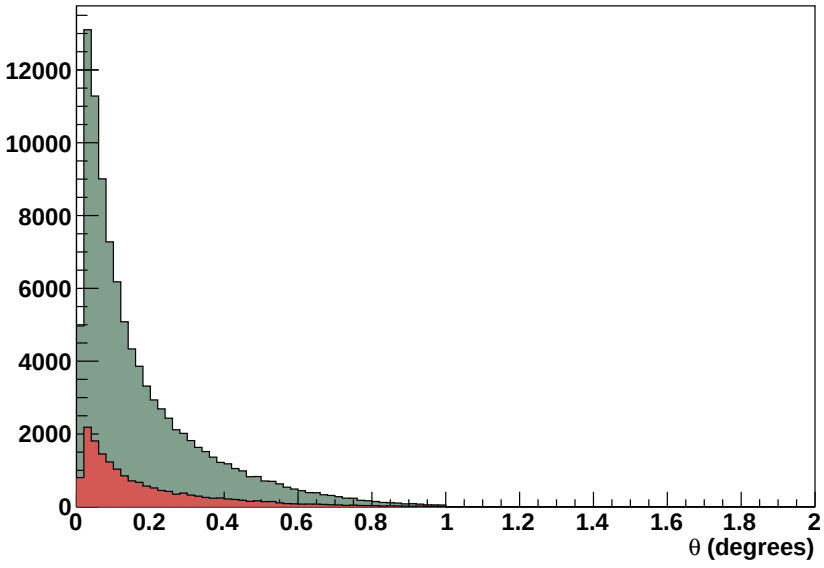


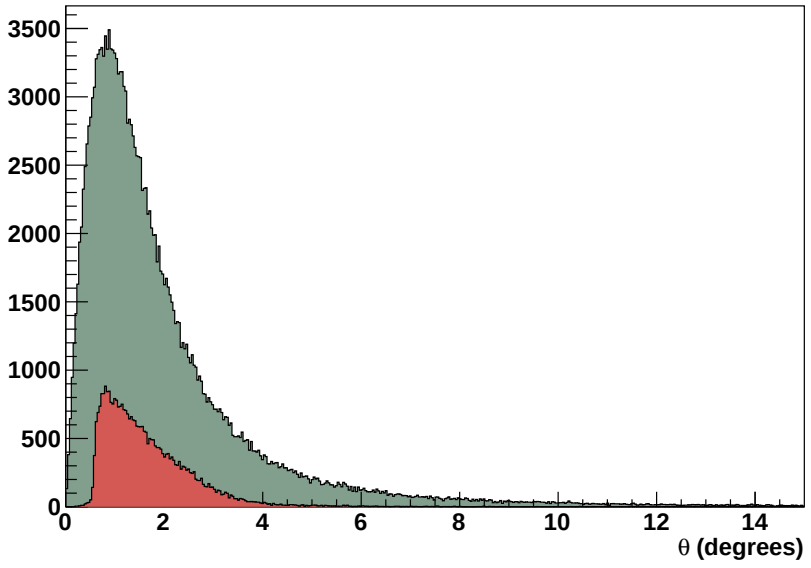


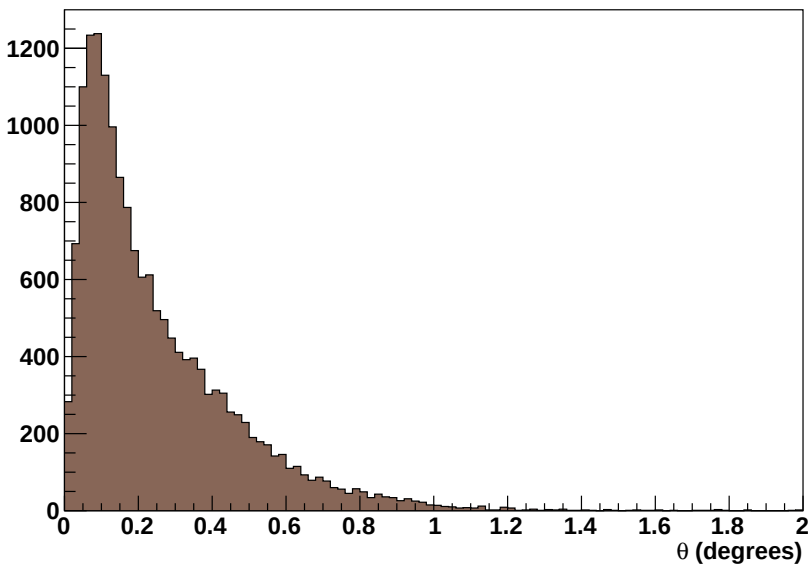


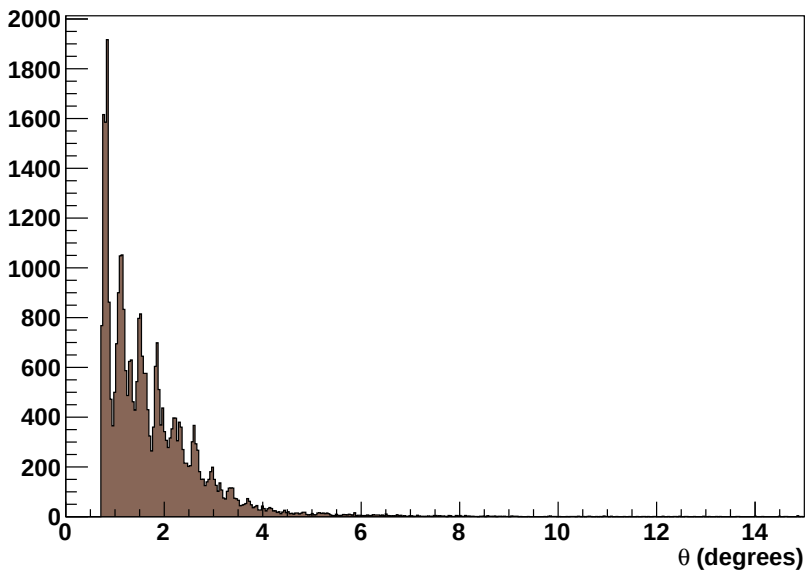


Generated and reconstructed θ of π^0 and γ

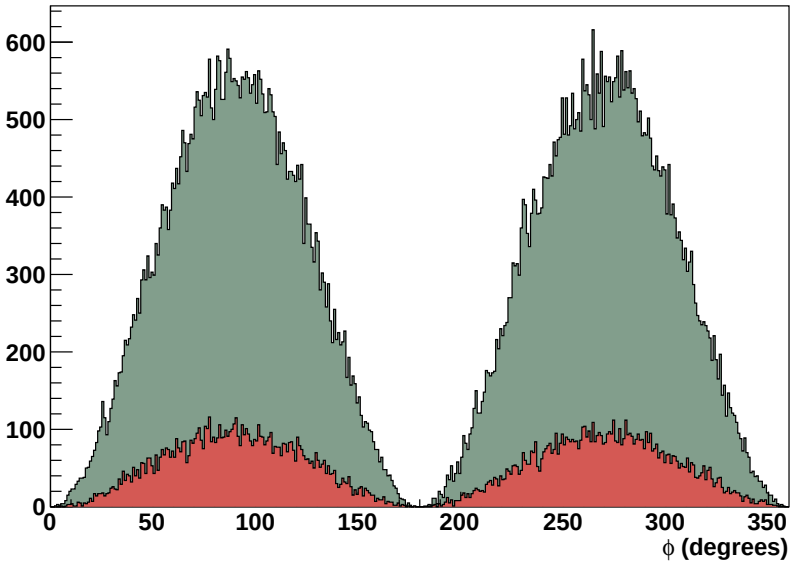


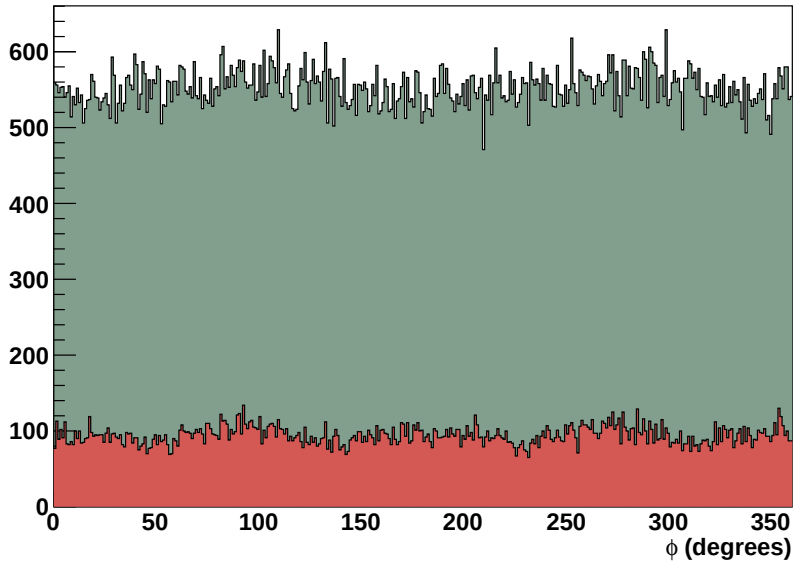


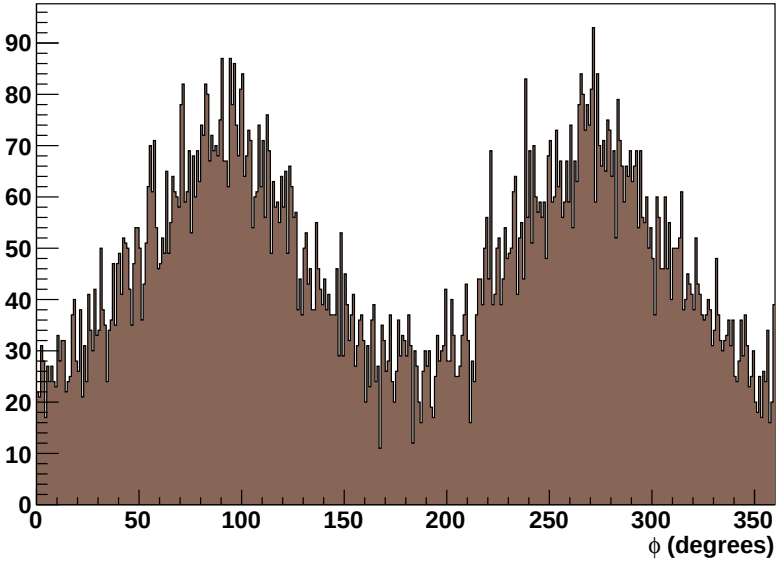


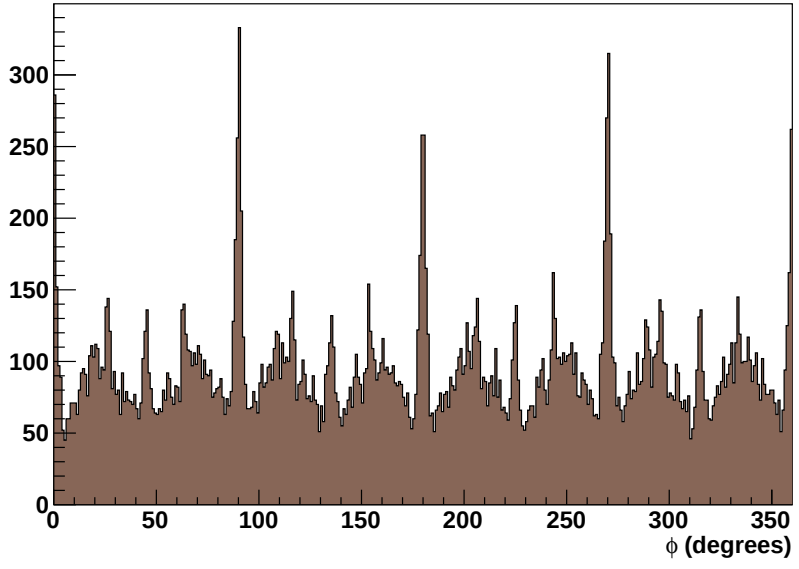


Generated and reconstructed φ of π^0 and γ

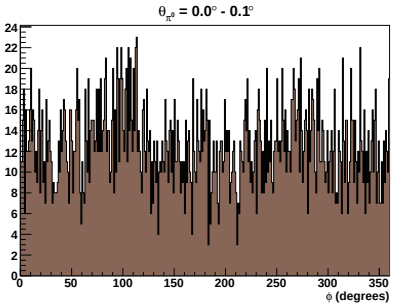


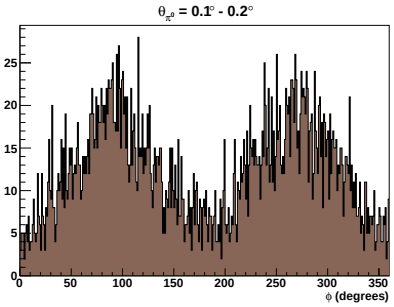


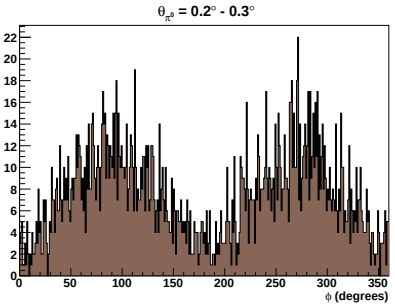


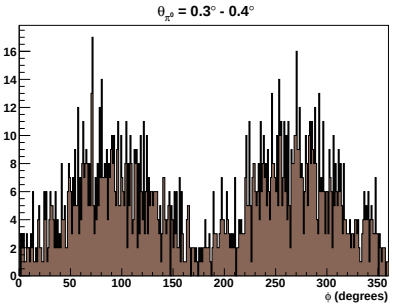


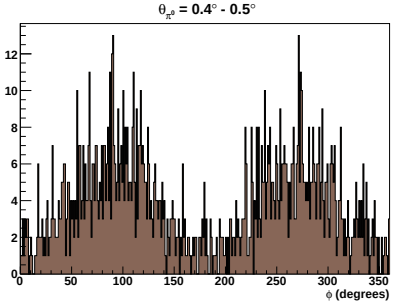
Reconstructed φ vs θ of π^0

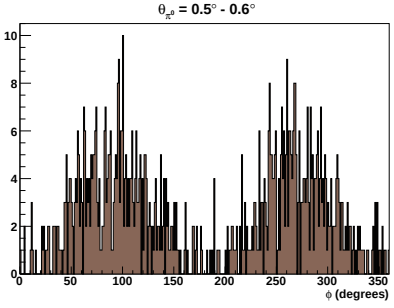


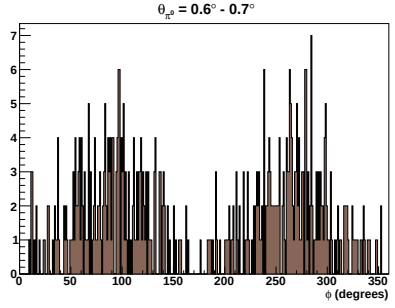


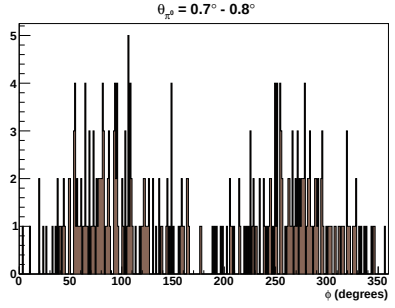


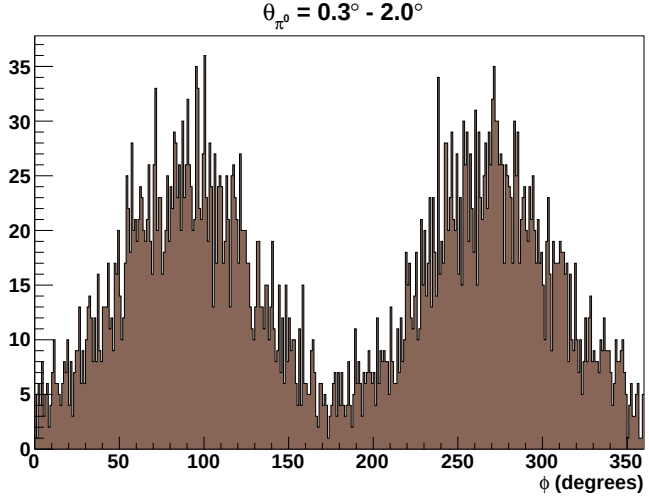




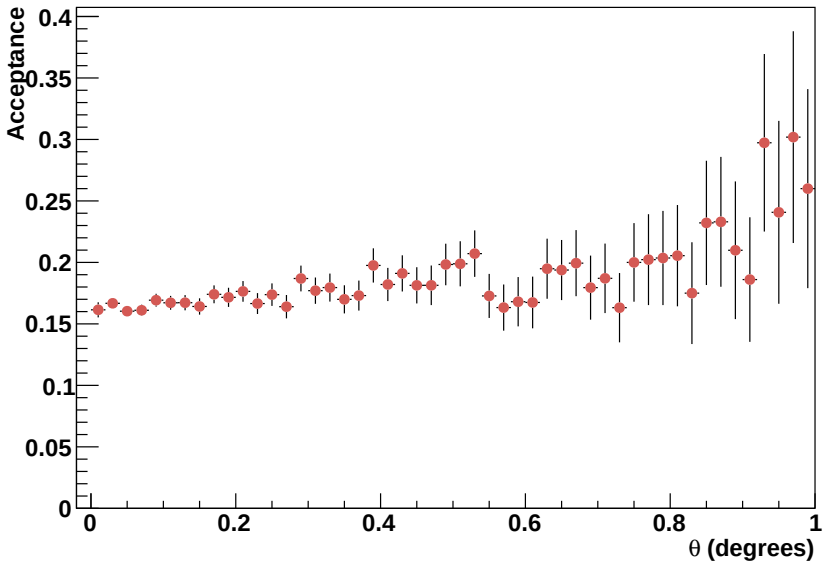


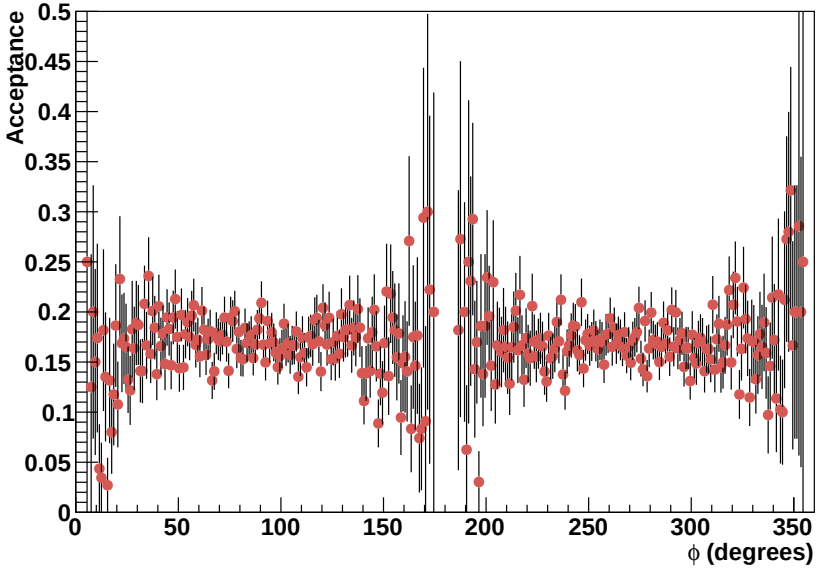






Acceptance of π^0





Main source of inefficiency:

- The central (beam) hole;
- The detector granularity.