

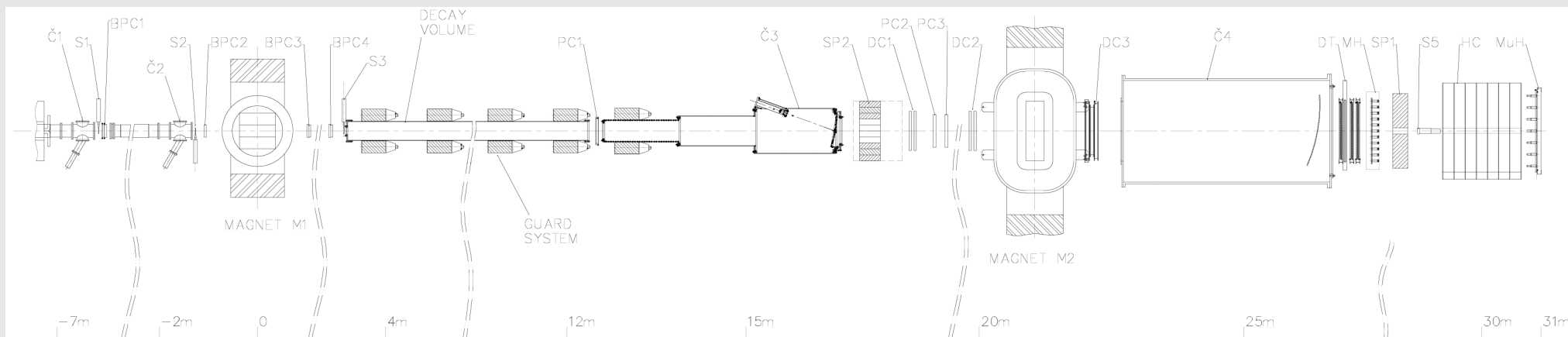


ISTRA+ results on kaon decays relevant to V_{us} (exp.)

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ISTRA+ setup



Event selection

- One beam track
- One secondary track
- Probability of vertex fit $>1\%$
- $500\text{cm} < z_v < 1500\text{cm}$
- Angle between secondary and beam tracks $>2\text{mrad}$
- $E_{\text{SP1}} > 1\text{GeV}$



K_{e3} selection

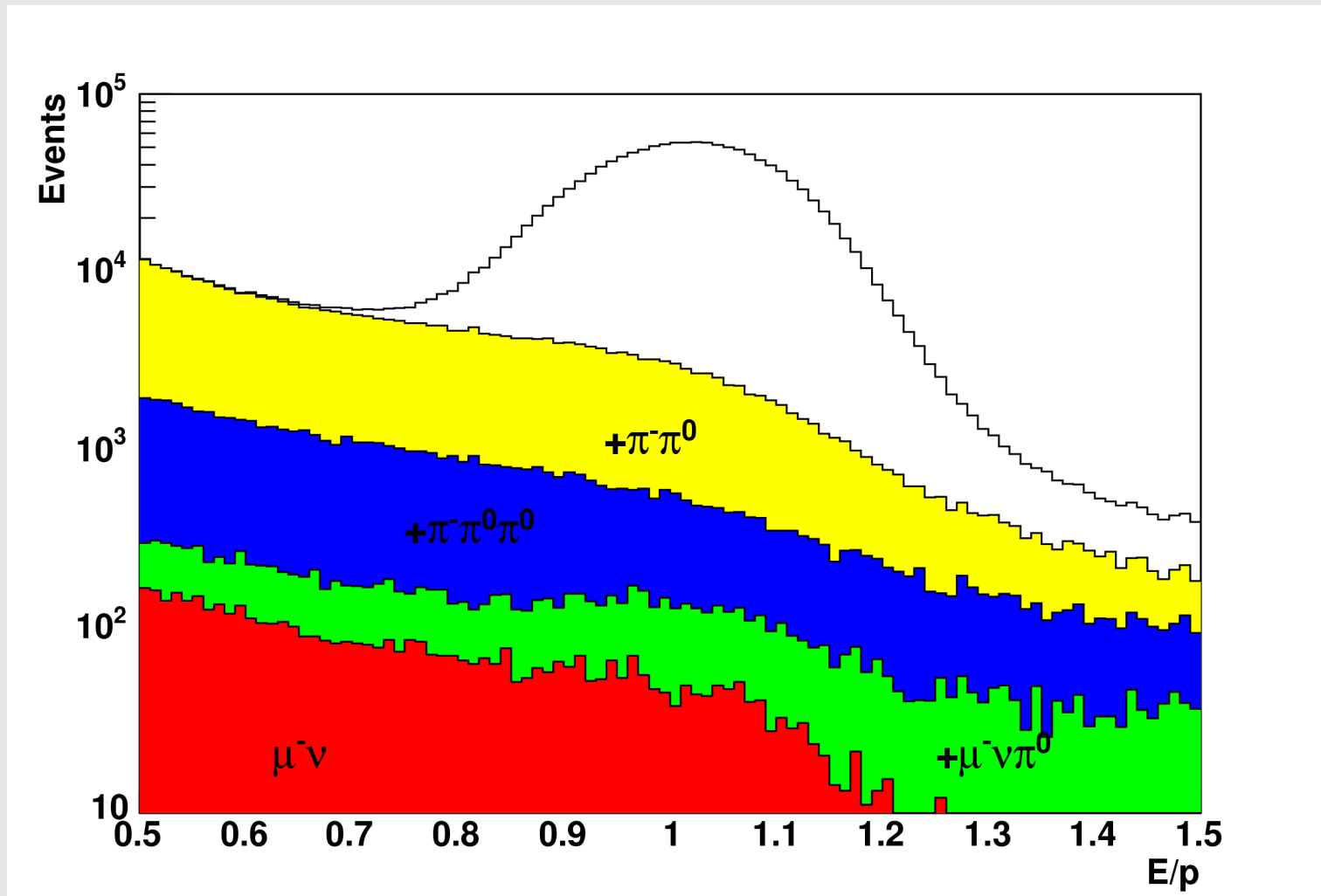
- $\text{Br}(K_{e3}) \sim 5\%$ - the main source of electrons
- $\text{Br}(K_{e+X}) \sim 10^{-5}$
- $\text{Br}(K_2) * \text{Br}(->e) \sim 10^{-5}$
- $K_{e3} = \text{electron}$
 - Distance between track and cluster $< 5\text{cm}$
 - $E/p \sim 1$



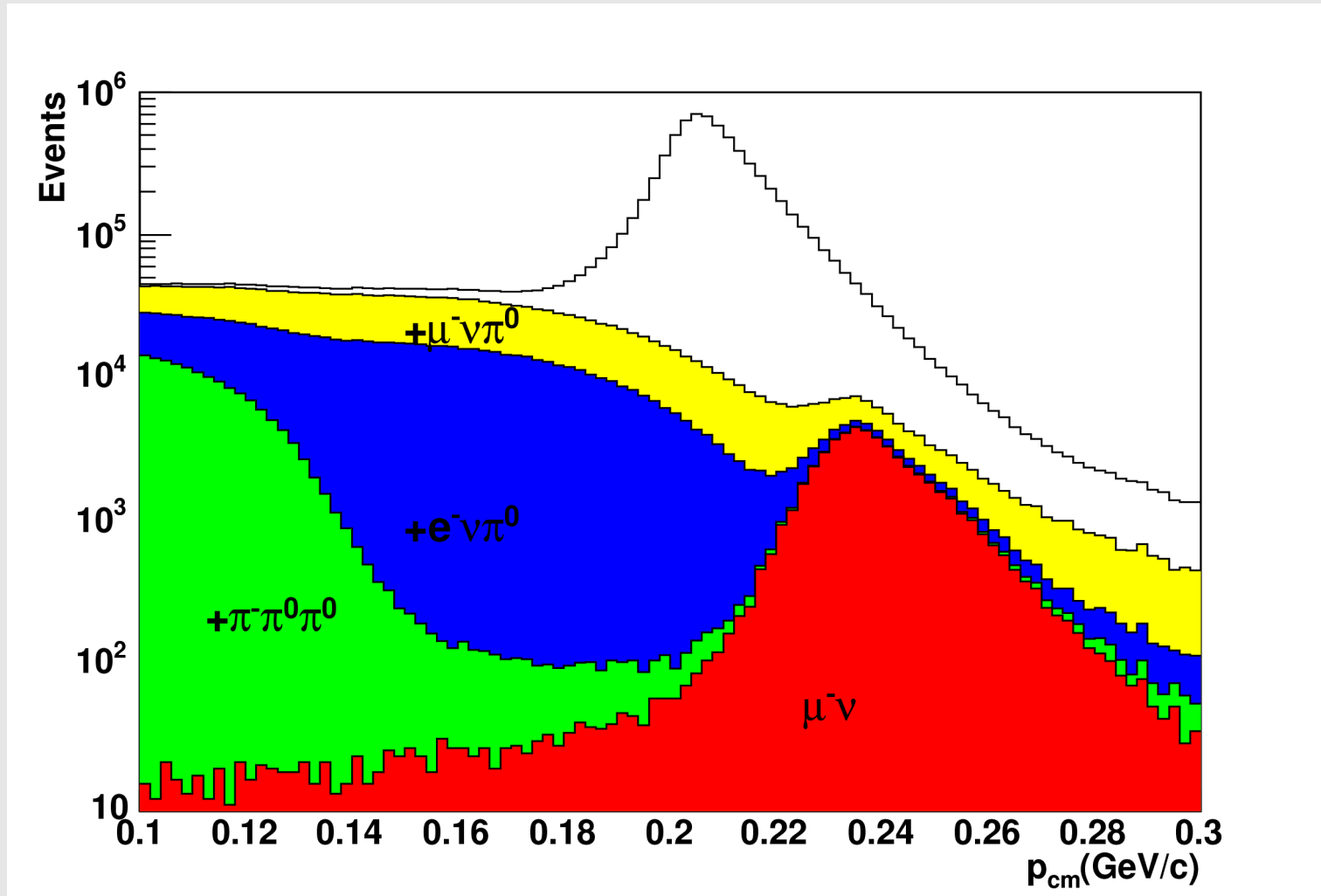
$K_{\pi 2}$ selection

- Track in electromagnetic calorimeter linked with cluster
- Peak in p_{cm} distribution

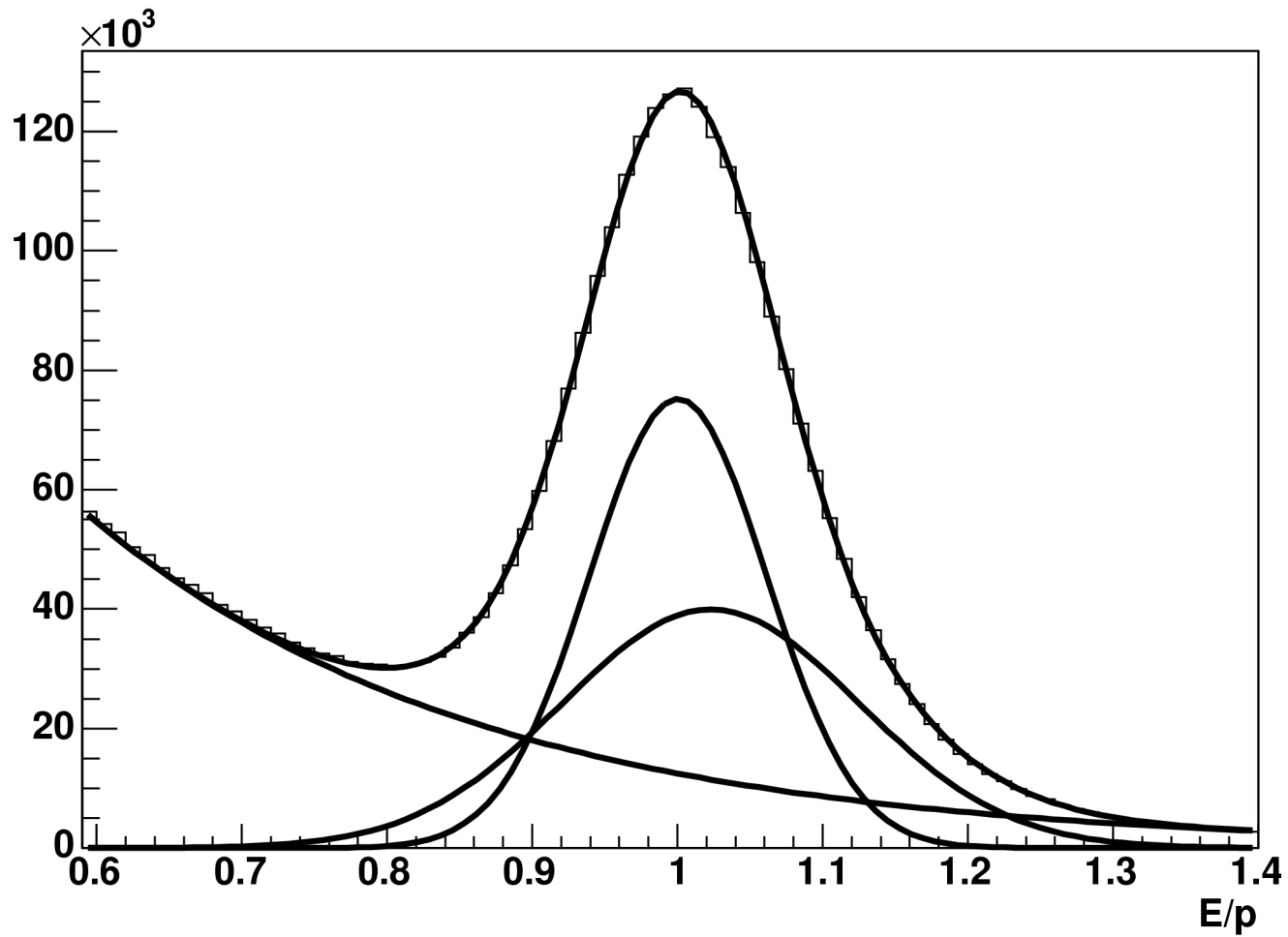
K_{e3} Monte Carlo



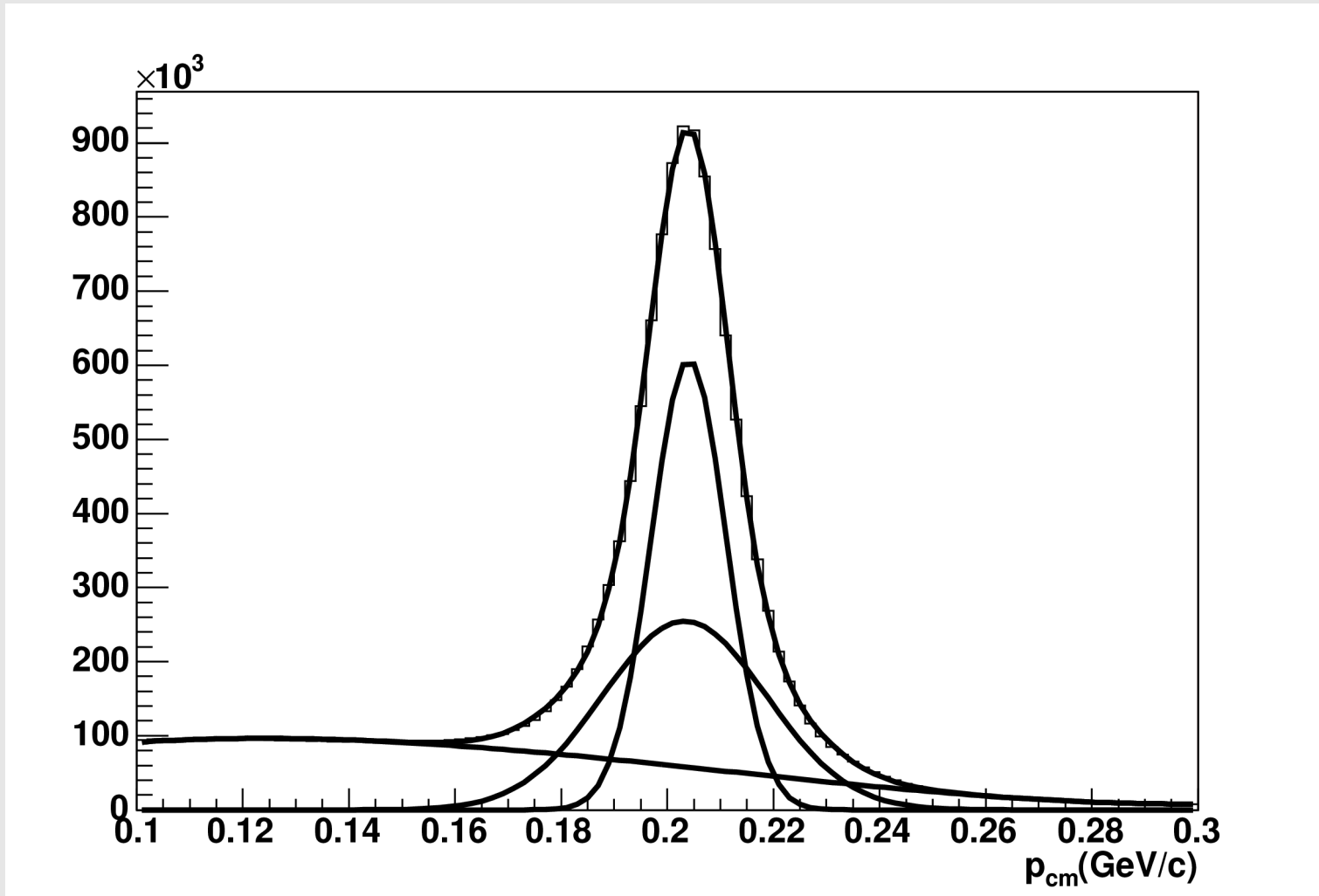
$K_{\pi 2}$ Monte Carlo



K_{e3} fit



$K_{\pi 2}$ fit



Fit results

- Monte Carlo

- $N_e = (1.2319 \pm 0.0013) \cdot 10^6$

- $N_\pi = (6.2758 \pm 0.0030) \cdot 10^6$

- Data

- $N_e = (2.1739 \pm 0.0024) \cdot 10^6$

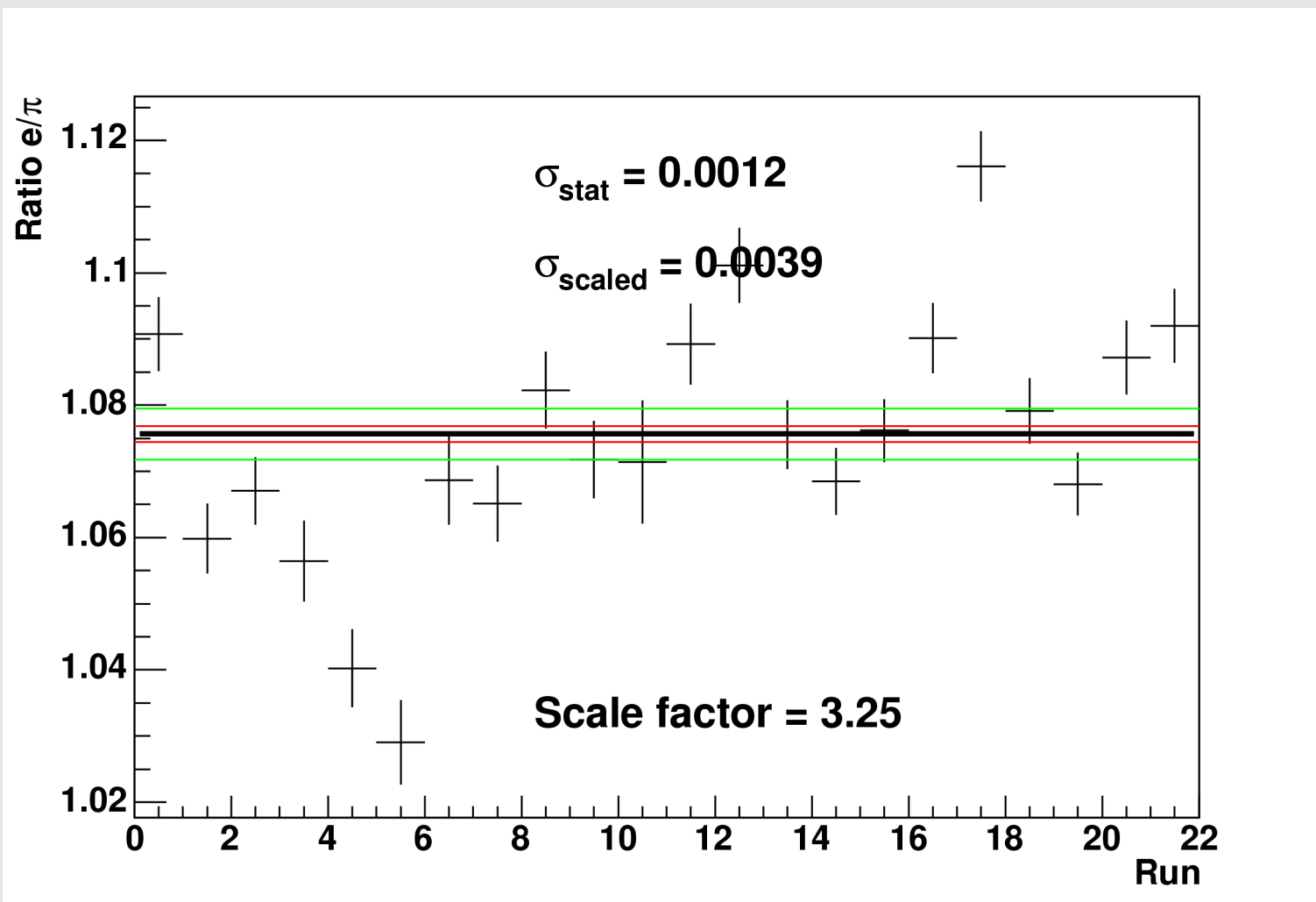
- $N_\pi = (10.2940 \pm 0.0053) \cdot 10^6$

- GEANT

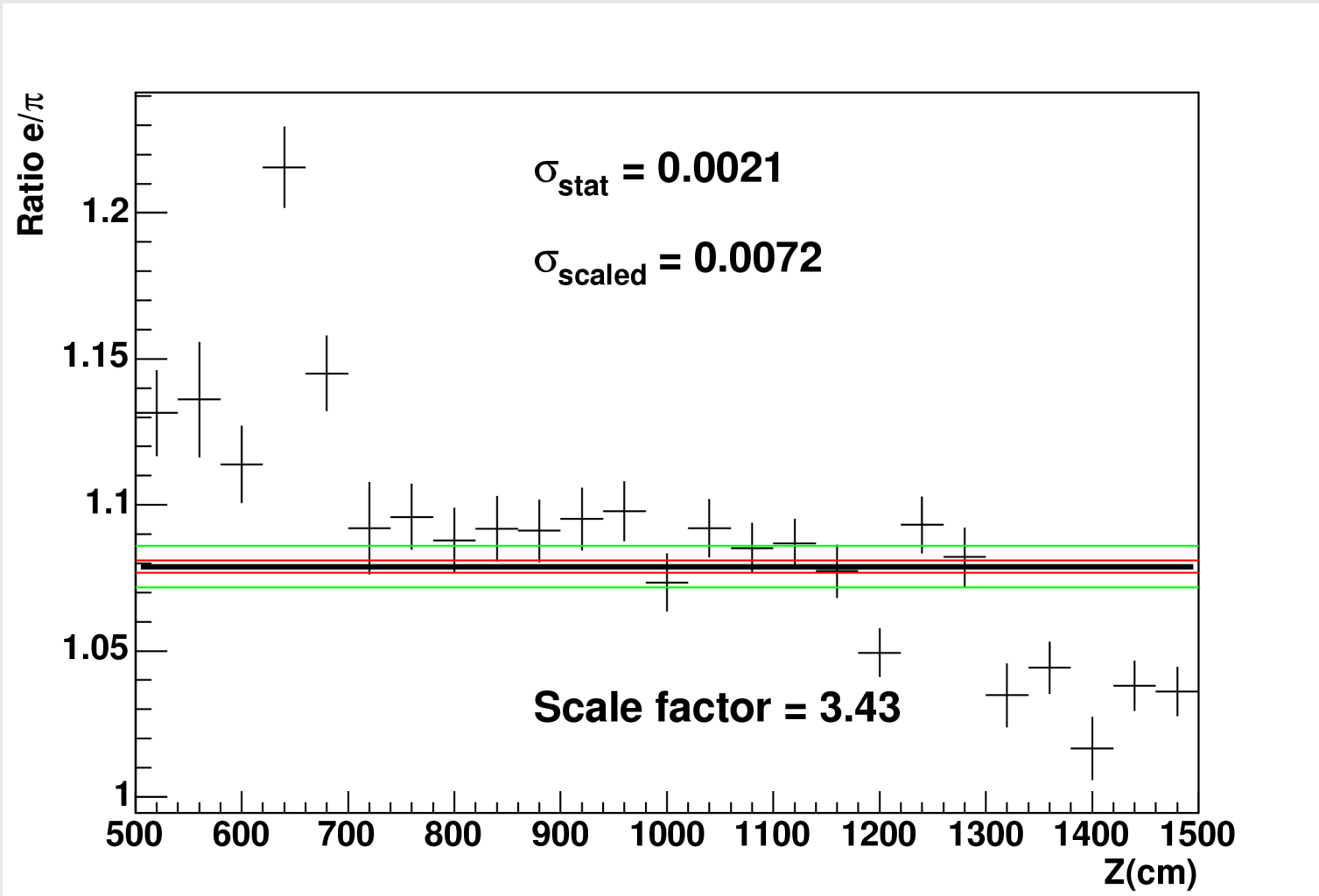
- $\text{Br}(K_{e3}) = 4.82\%$

- $\text{Br}(K_{\pi 2}) = 21.17\%$

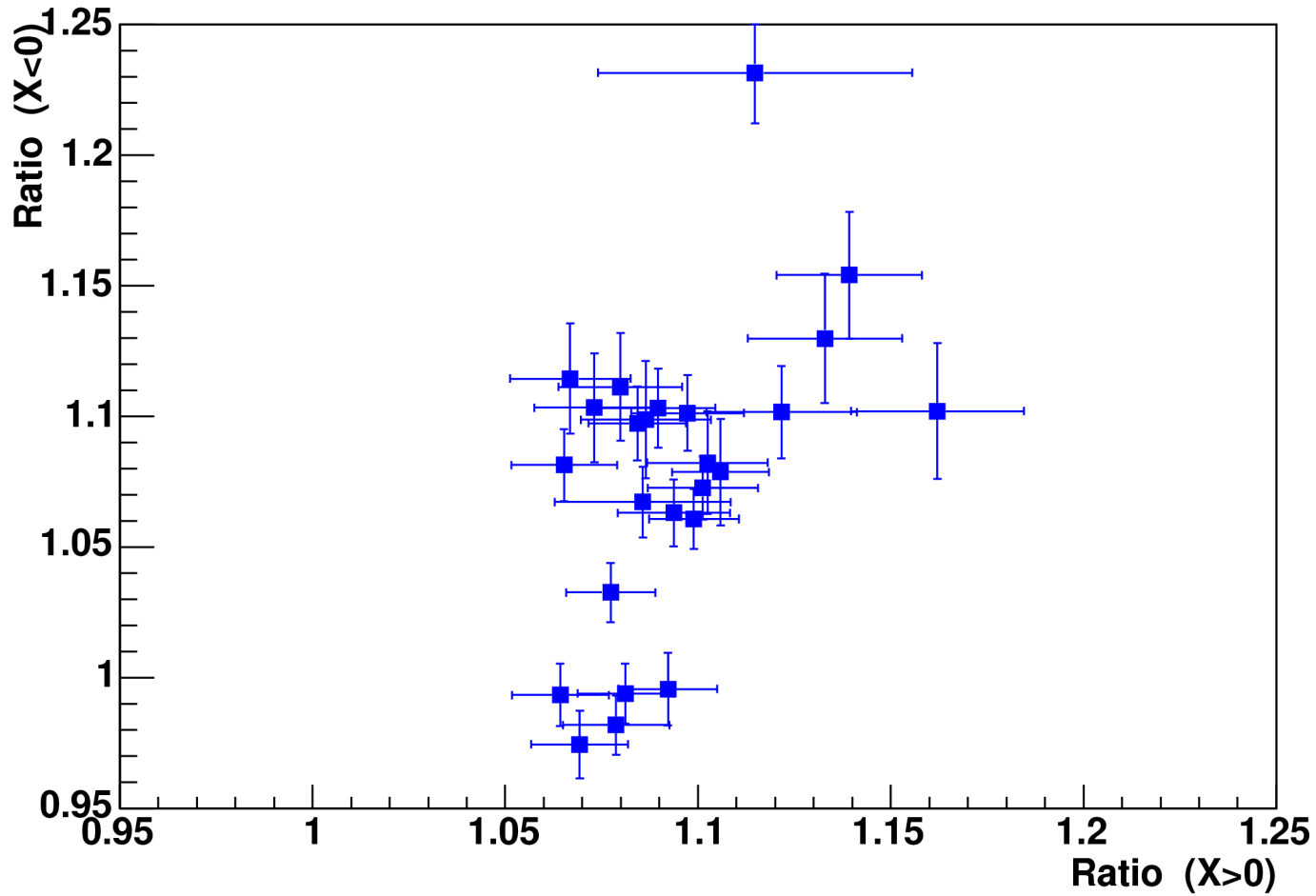
Systematics I



Systematics II



Systematics III





Result

$$\text{Br}(K_{e3}) / \text{Br}(K_{\pi 2}) =$$

$$0.2449 \pm 0.0004(\text{stat}) \pm 0.0015(\text{sys})$$