Report on KOTO EMCal Study

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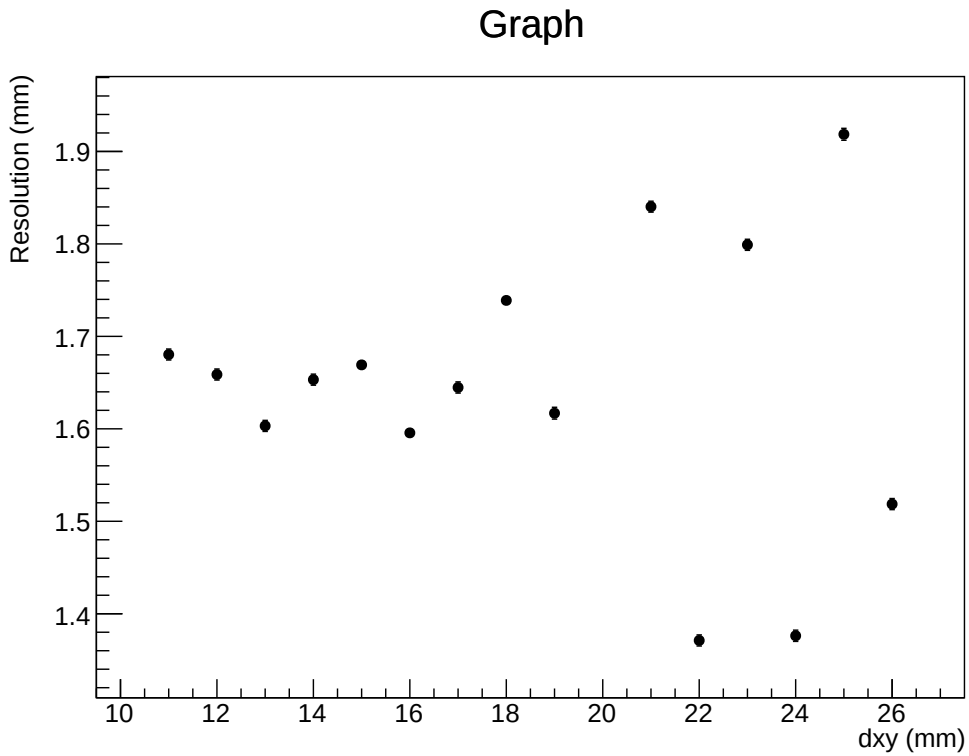
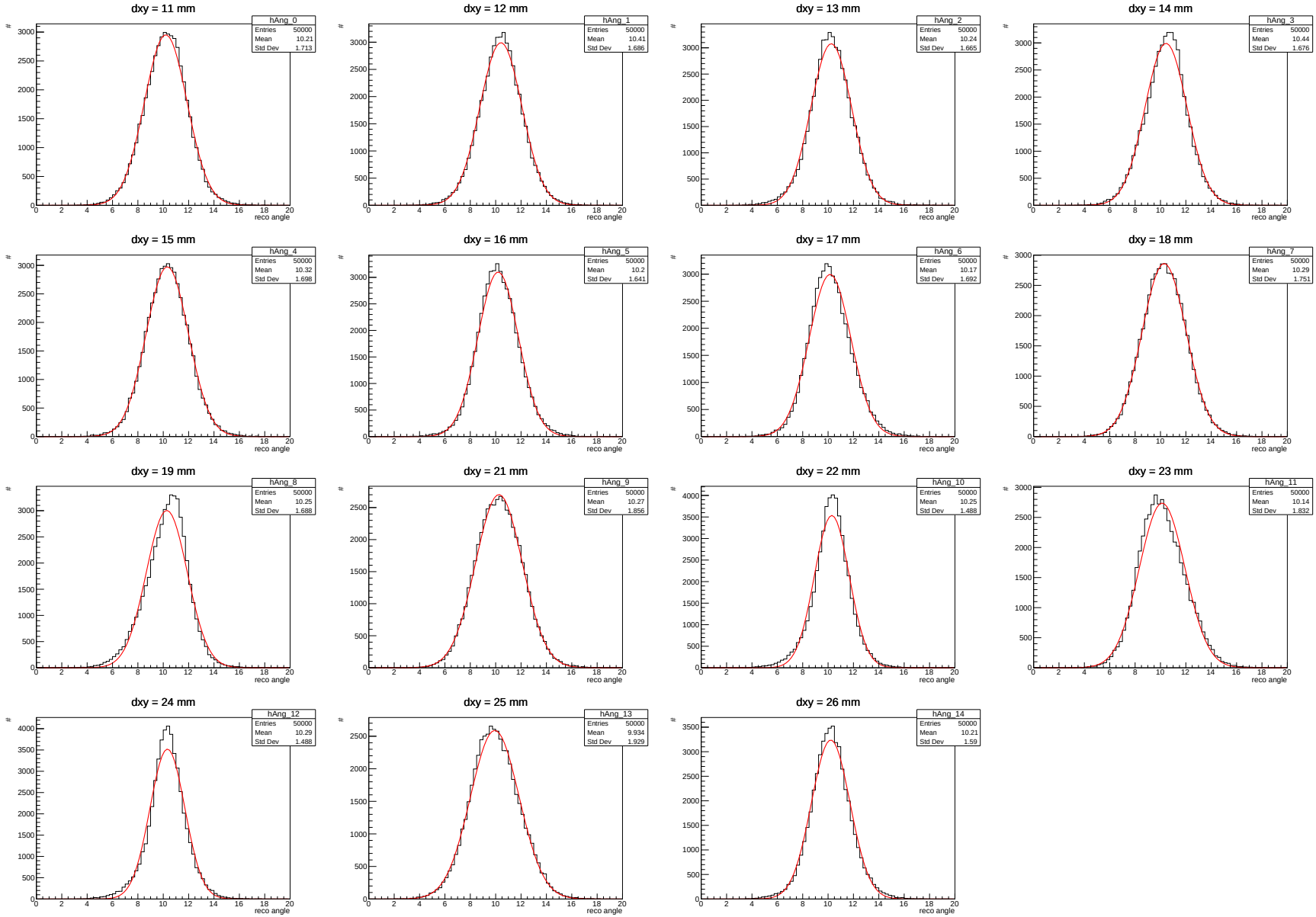
Contents

dependence on the detector width

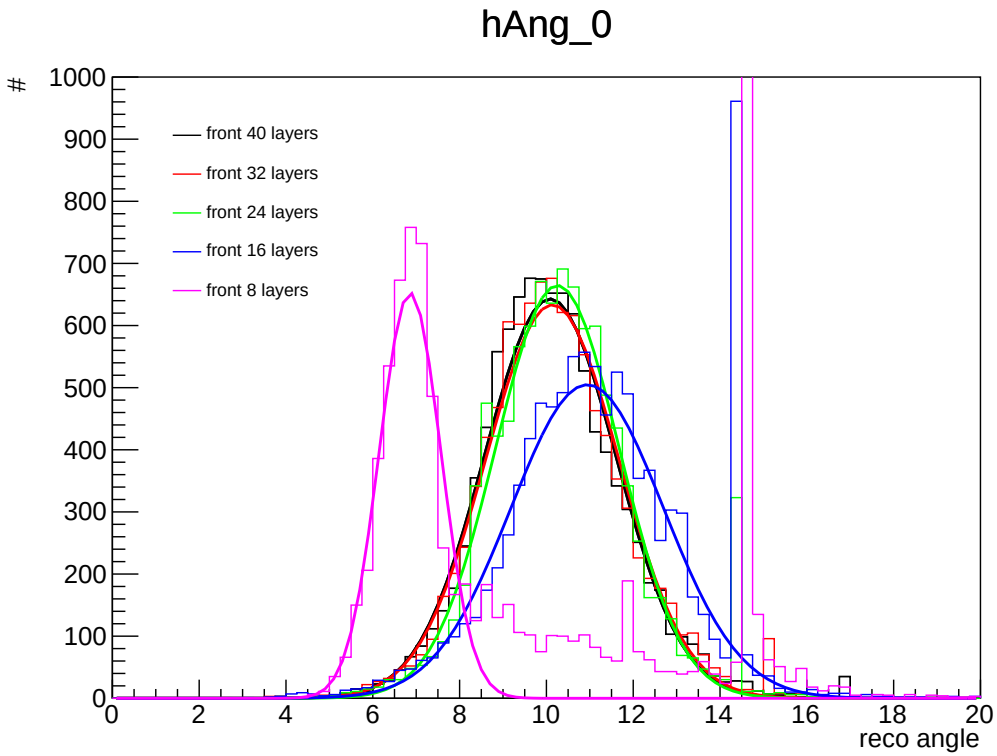


- Training sample: random generation for polar and azimuthal angle with 200k events
- Test sample: 50k fixed $\theta = 10^o$ events.
- Resolution is defined as standard deviation of gaussian
- Systematics from fit

dependence on the detector width



Reconstruction with front layers



- Training sample: random generation for polar and azimuthal angle with 200k events
- Test sample: 10k fixed $\theta = 10^o$ events.
- fine with 24 layers.

Status

- Two separate ML for θ_x and θ_y
- Need to clean obsolete data and define public geant4 output?
  - Fixed θ and φ
  - Fixed θ with uniform φ
  - Uniform θ and φ
- Train is done with
  - n_estimators=100, learning_rate=0.08, gamma=0, subsample=1
  - Variation of parameters