

# Status of Tagger Reconstruction and HyCal Trigger Efficiency

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# Statistics

	leadglass	crystal
runs	16	34
files	579	1069
size	~1.1 To	~2.1 To
events	~128 M	~235 M
usable events	~16 M	~29 M
usable events per module	~27 k	~25 k

# Tagger Mapping

- ▶ For both E and T counters
- ▶ 16 block swaps:
  - $0+32\cdot i \rightarrow 16+32\cdot i$
  - ...
  - $15+32\cdot i \rightarrow 31+32\cdot i$
  - $16+32\cdot i \rightarrow 0+32\cdot i$
  - ...
  - $31+32\cdot i \rightarrow 15+32\cdot i$
- ▶ Missing channels:
  - ▶ TL20, TL32, TL33
  - ▶ TR17, TR18, TR19, TR55
  - ▶ E40, E96, E131, E225, E258, E291

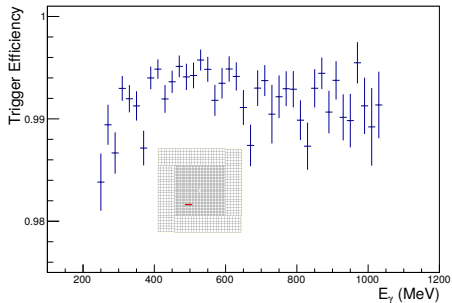
## Preliminary Efficiency

- ▶ 3 run analyzed: 960 (crystal), 971(bottom lead glass), 976 (top lead glass)
- ▶ Using calibration gains extracted from physics run (1100)
- ▶ Cuts:
  - ▶ ET Matching (from the tagger)
  - ▶  $3\sigma_{E_\gamma/E_{Hycal}}$
- ▶ Formula:

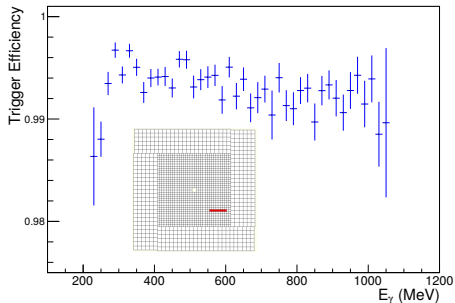
$$\epsilon = \frac{\#events(trigger \in [TotalSum, LeadglassSum])}{\#events(trigger \in [TotalSum, LeadglassSum, Tagger])}$$

- ▶ Binomial statistical uncertainty

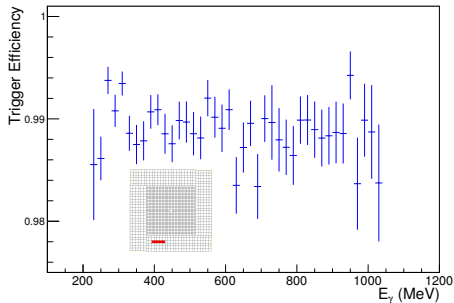
# Run 960 (crystal)



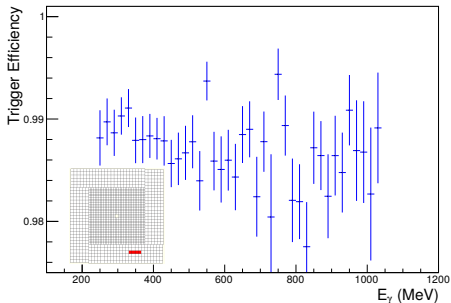
- ▶ Efficiency plateaux from 350-400 MeV
- ▶ Overall efficiency of 0.995



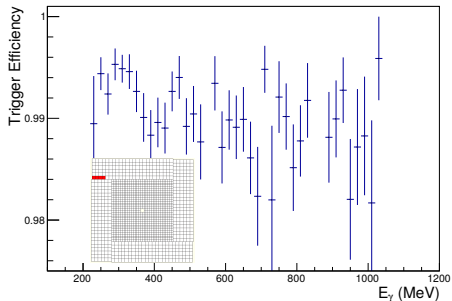
## Run 971 (bottom leadglass)



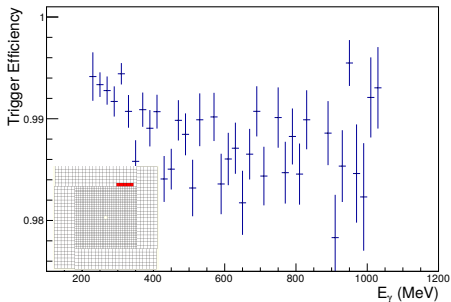
- ▶ Samples taken with less statistics
- ▶ Slightly lower efficiency for leadglass: 0.99



# Run 976 (top leadglass)



- ▶ Efficiency might be affected by transition area



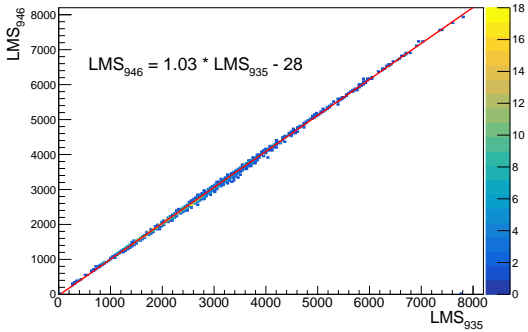
# Plans

- ▶ Replay all runs 889 - 979 (ongoing: done until 955)
  - ▶ Check pedestal and LMS for every run and every module
  - ▶ Check for beam stability
  - ▶ Extract calibration gain for all modules from this data
  - ▶ Extract efficiency (depending on  $E_\gamma$ ):
    - ▶ every 2x2 module blocks for crystals
    - ▶ every 3x2 module blocks for leadglass
- creation of efficiency map for acceptance
- ▶ Comparison of calibration gains with calibration gain extracted from physics data



# Discussion

- ▶ Handling change of gates between run 935 and 946



- ▶ Handling difference of calibration gains