Status of Tagger Reconstruction
and
HyCal Trigger Efficiency

Maxime Levillain

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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
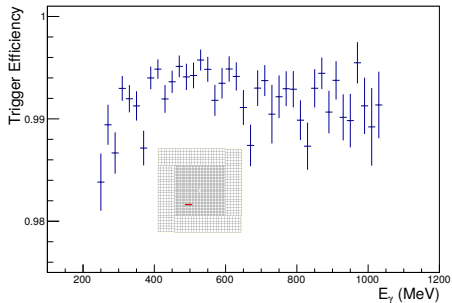 - TR17, TR18, TR19, TR55
  - E40, E96, E131, E225, E258, E291

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)
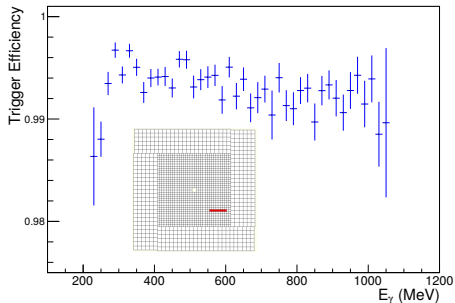   - $3\sigma_{E_\gamma / E_{Hycal}}$
- Formula:

$$\epsilon = \frac{\#events(trigger \in [TotalSum, LeadglassSum]}{\#events(trigger \in [TotalSum, LeadglassSum, Tagger]}$$
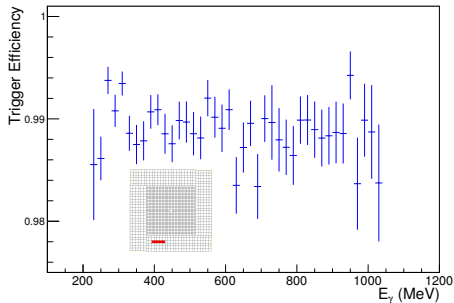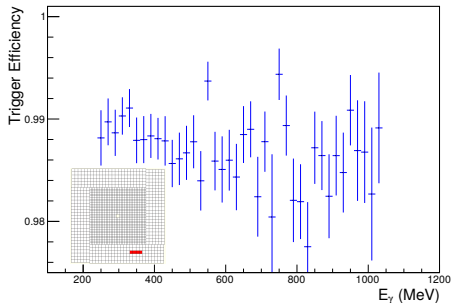
- Binomial statistical uncertainty

Run 960 (crystal)

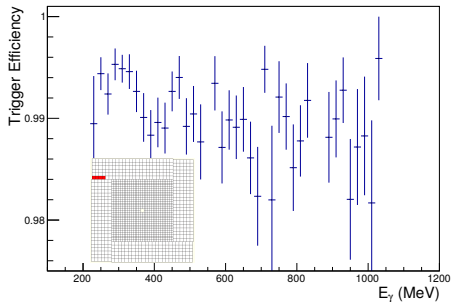- ▶ Efficiency plateaux from 350-400 MeV
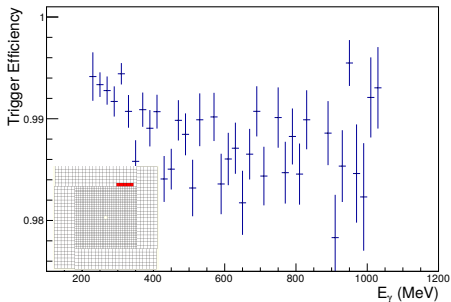- ▶ Overall efficiency of 0.995

Run 971 (bottom leadglass)

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

Run 976 (top leadglass)
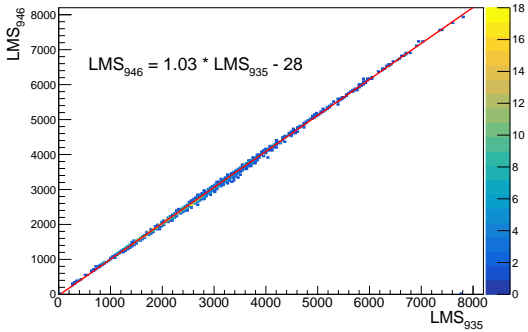

▶ Efficiency might be
affected by transition
area

Plans

- Replay all runs 889 - 979 (ongoing)
- Check pedestal and LMS for every run and every module
- Extract calibration gain for all modules from this data
- Extract efficiency (depending on E_γ) for every 2x2 module blocks
  $\rightarrow$ 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