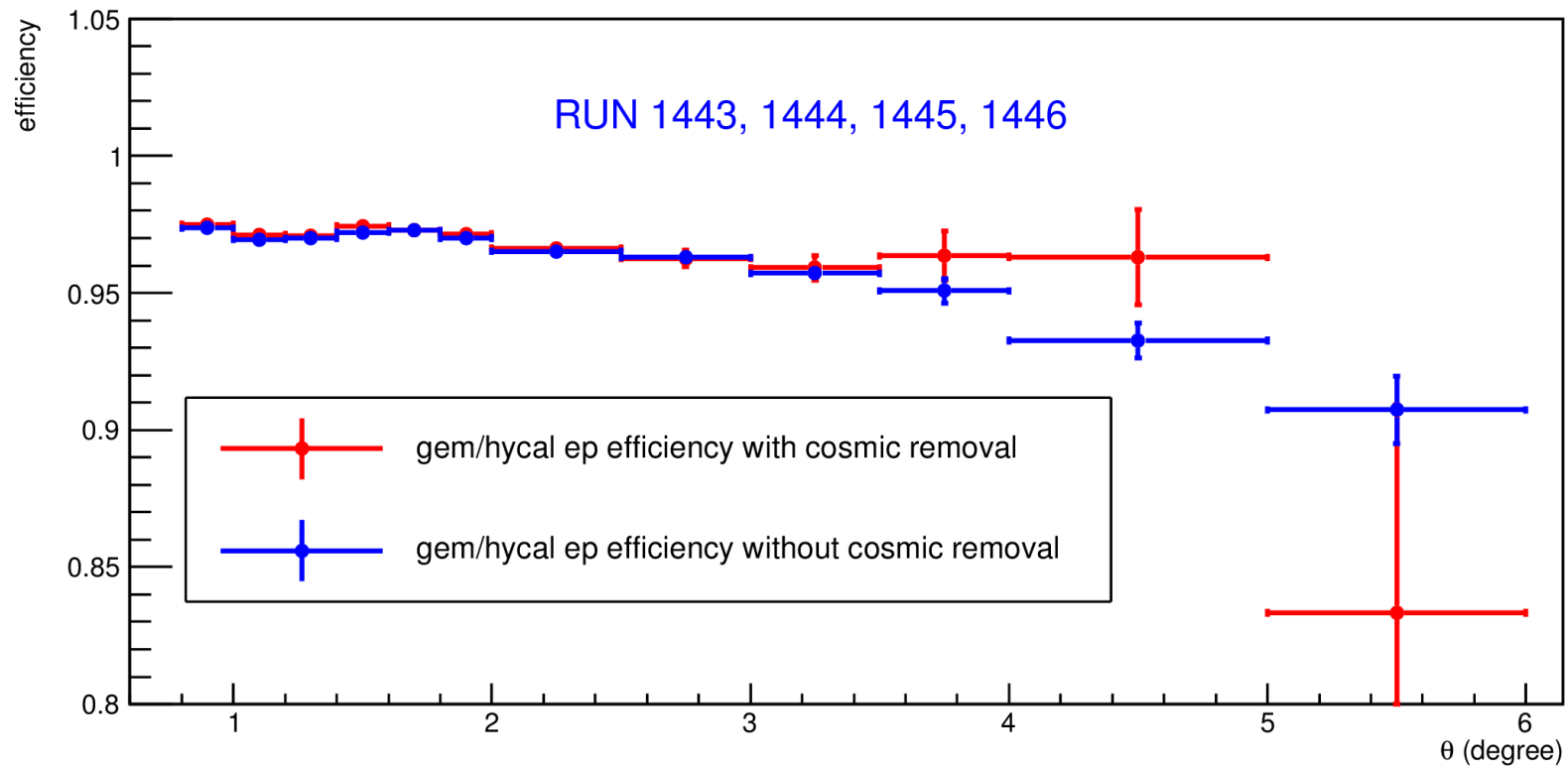
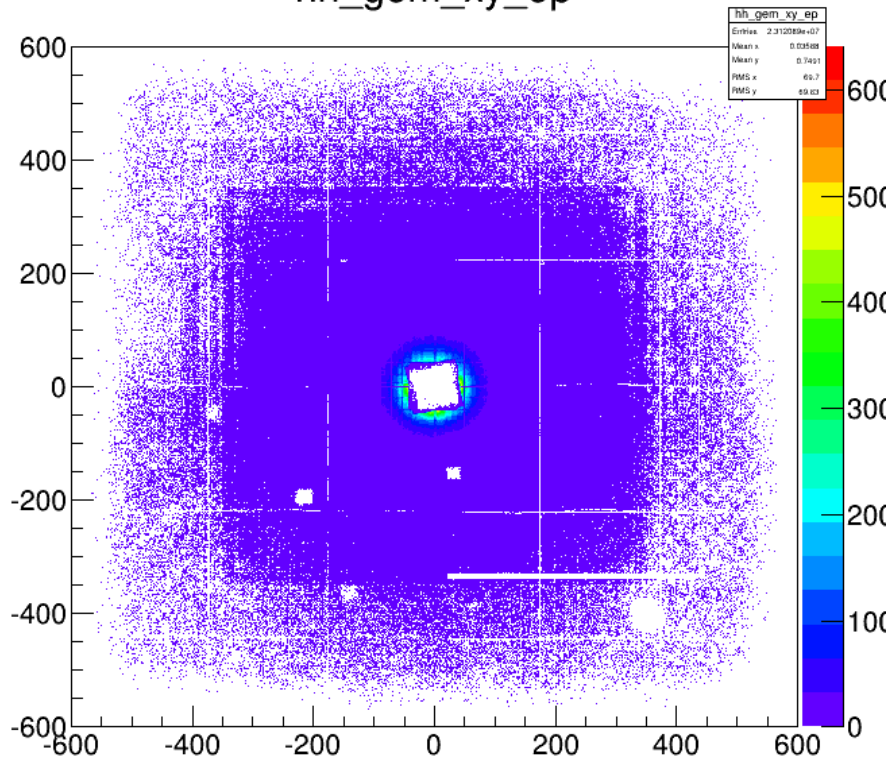


Efficiency compare before and after cosmic removal

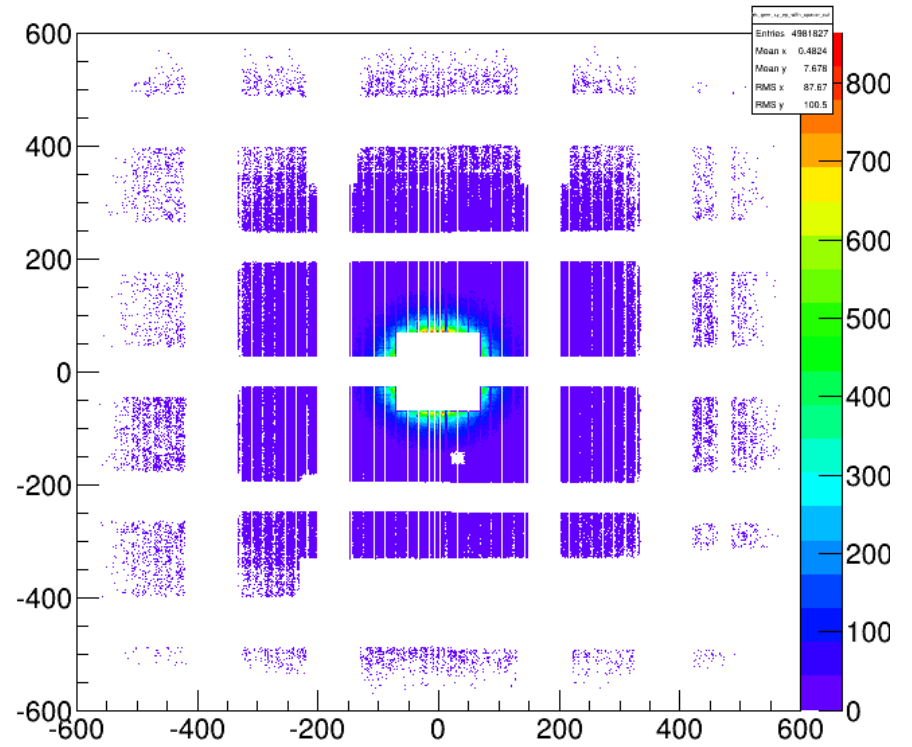


- 4 runs
- Cosmic removal significantly reduced the efficiency slope
- Need more statistics

hh_gem_xy_ep

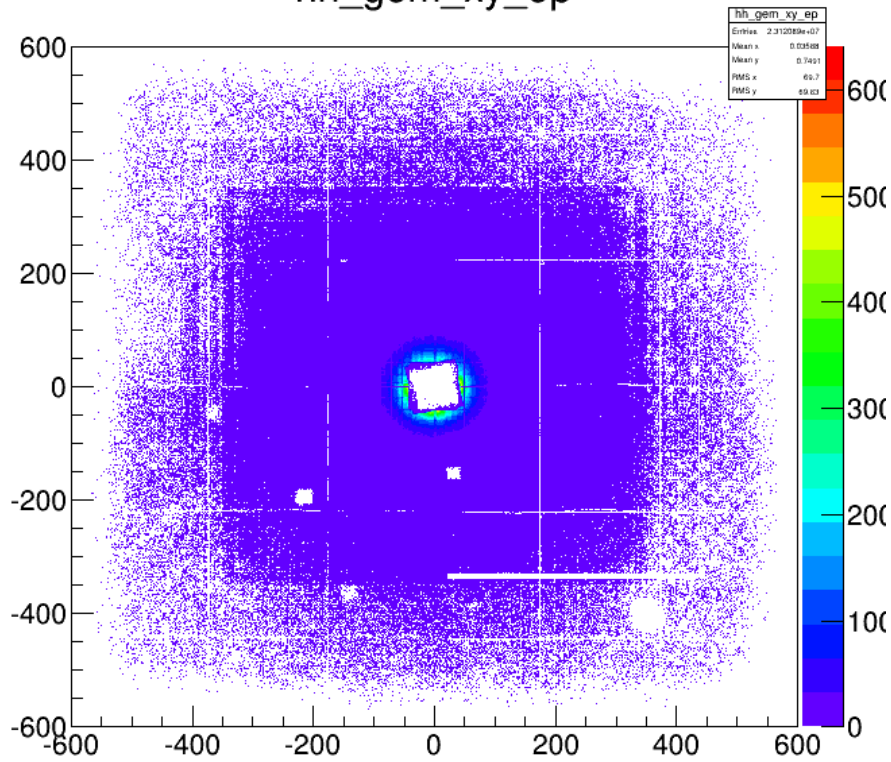


hh_gem_xy_ep_with_spacer_cut

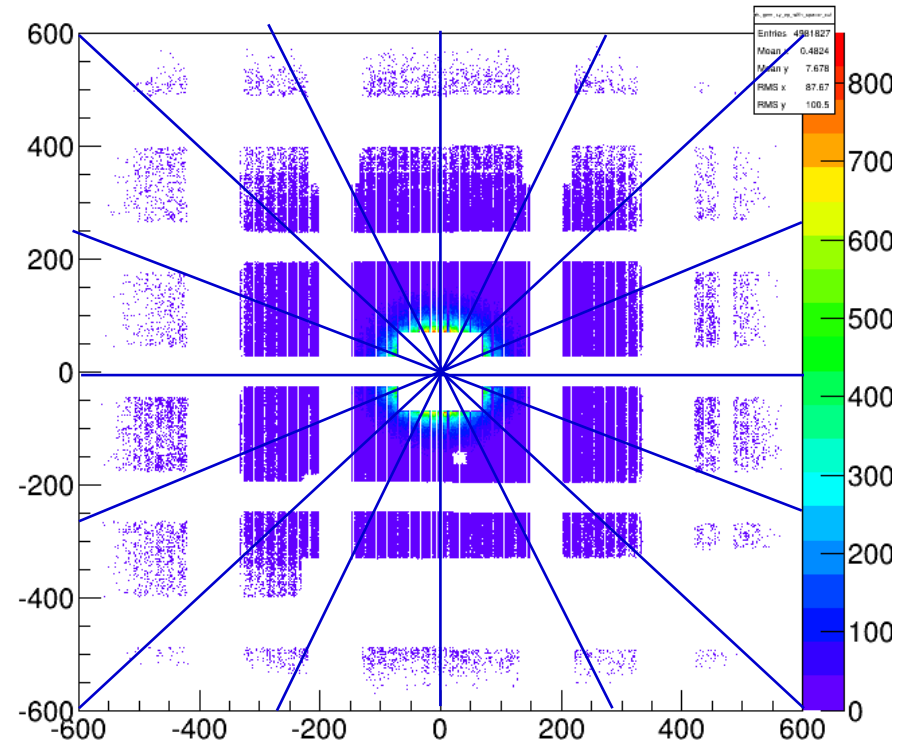


aggressive dead area cut

hh_gem_xy_ep

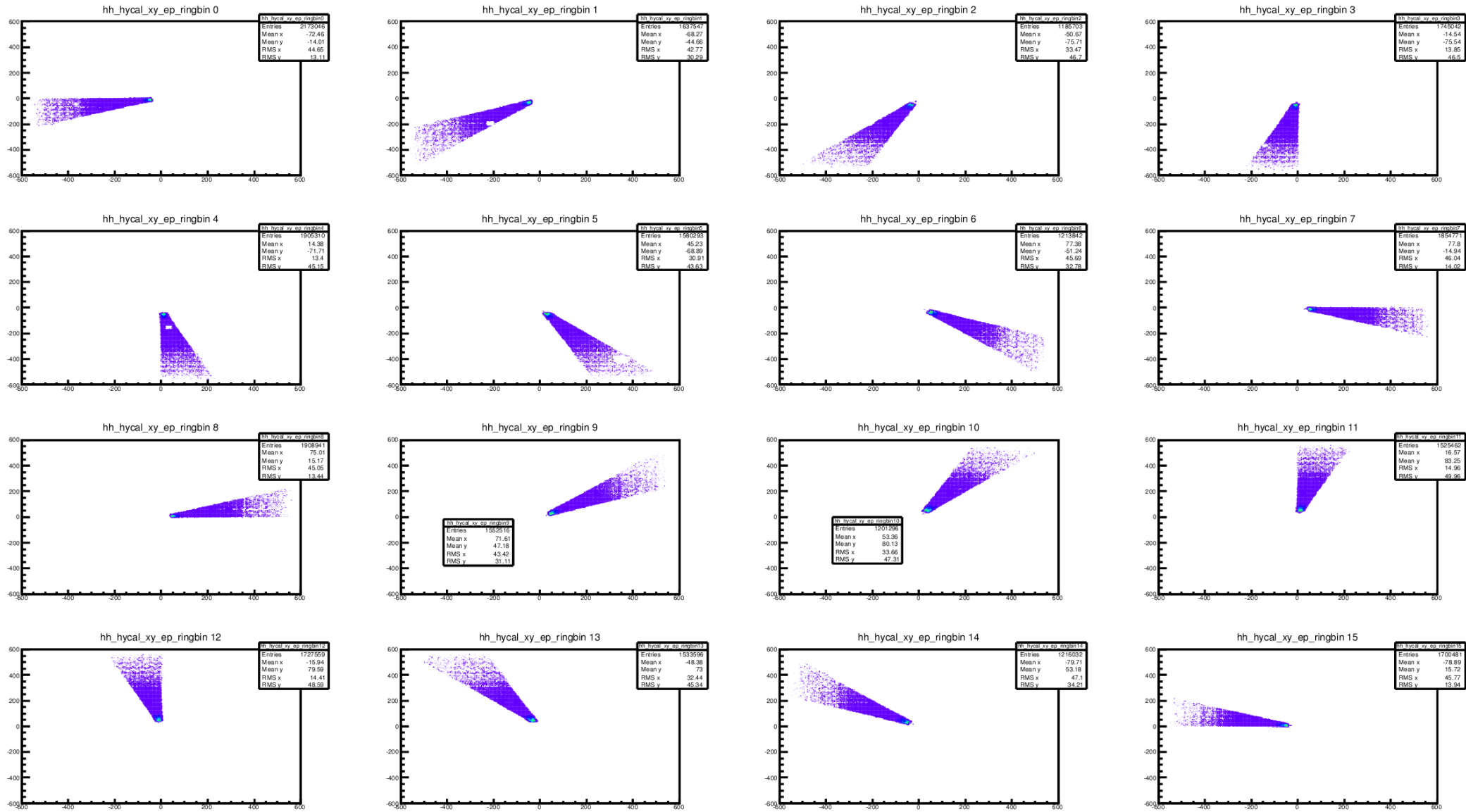


hh_gem_xy_ep_with_spacer_cut

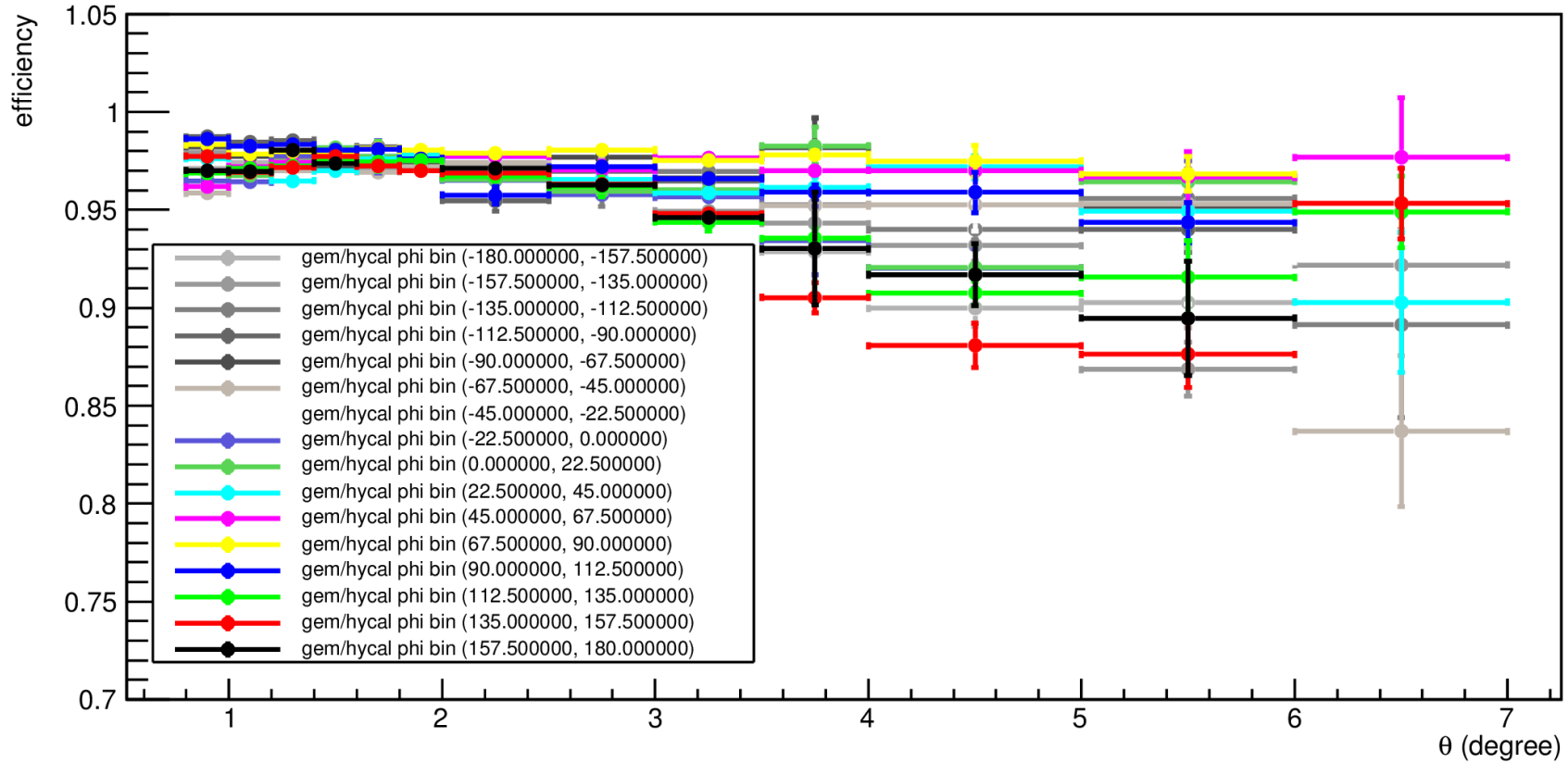


Next step: study x-y sectors, instead of radial sectors,
Isolate each HyCal module

HyCal cluster 2d distribution

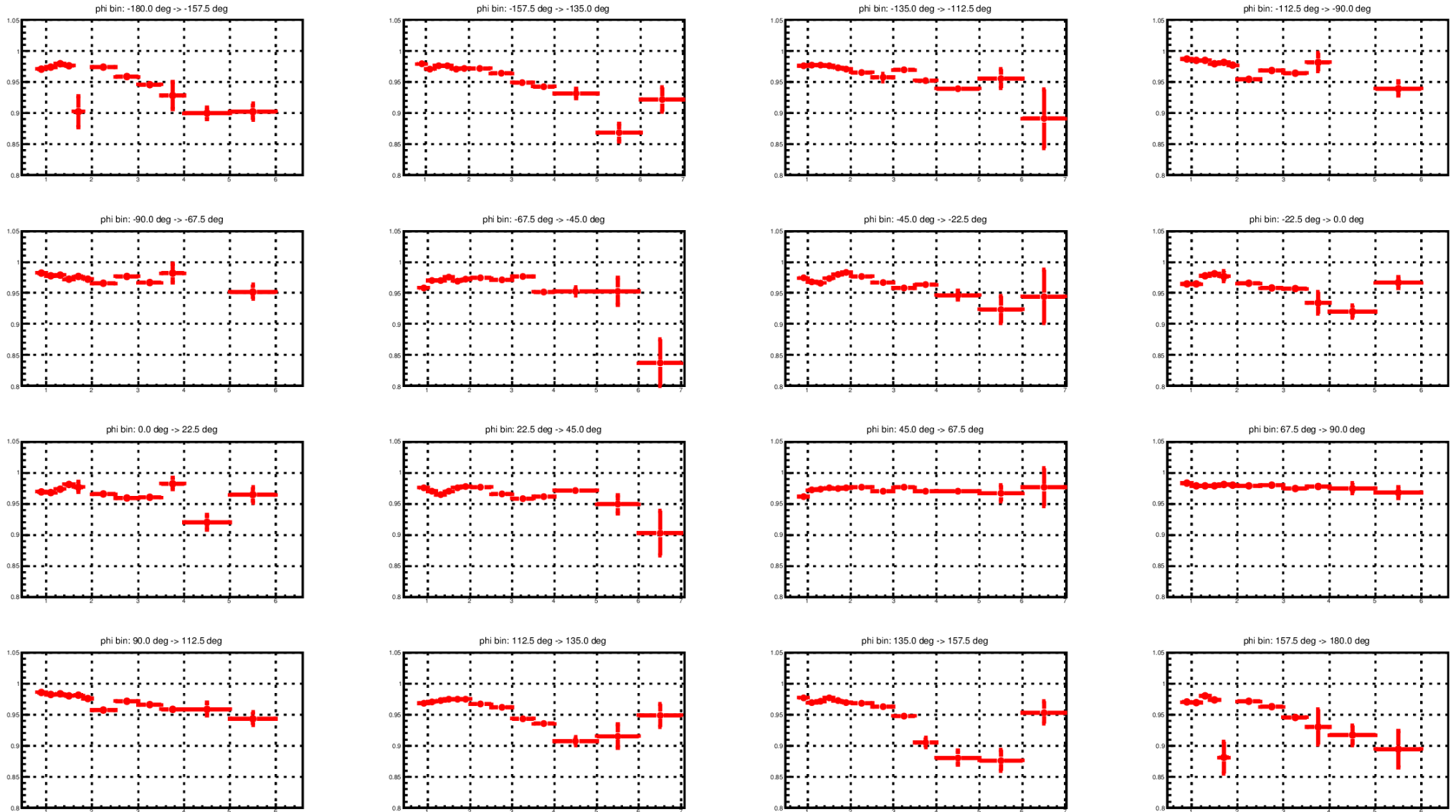


Efficiency in phi bins

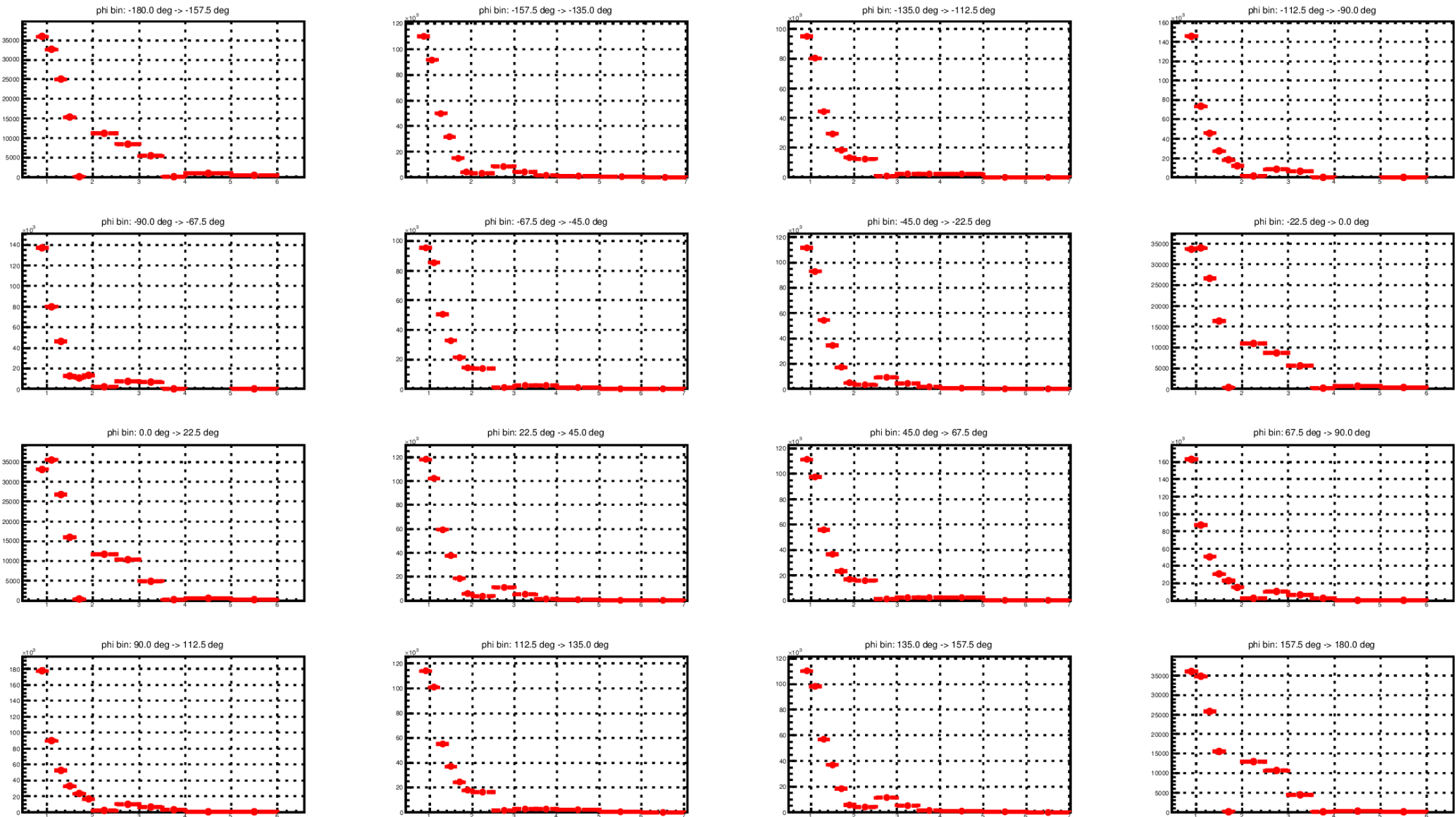


2GeV remove dead area

Efficiency in phi bins

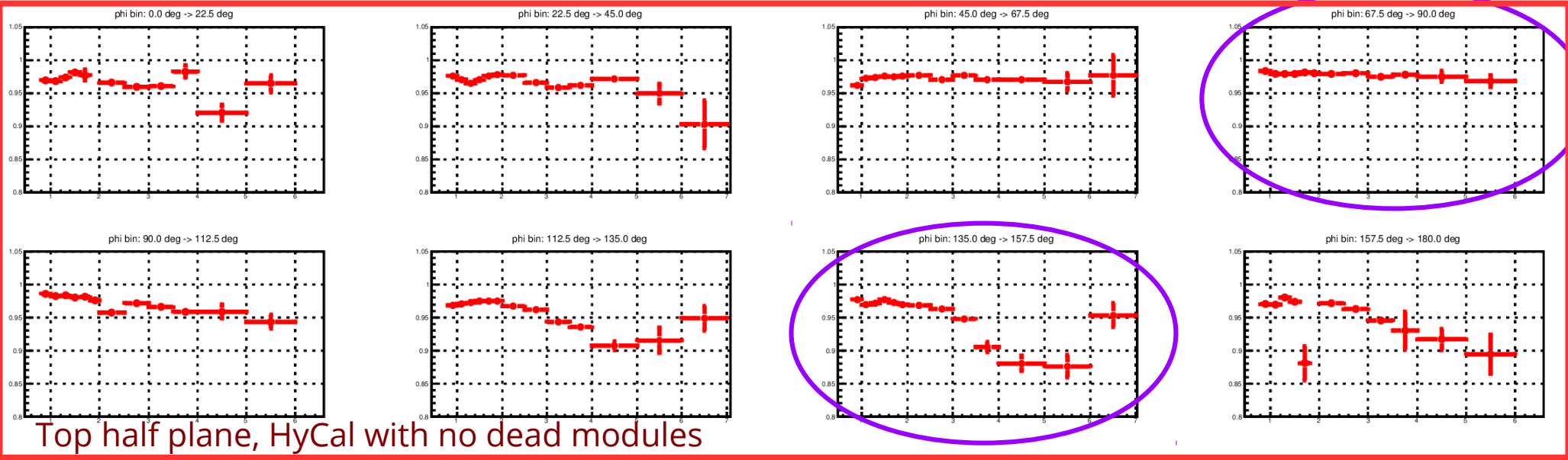
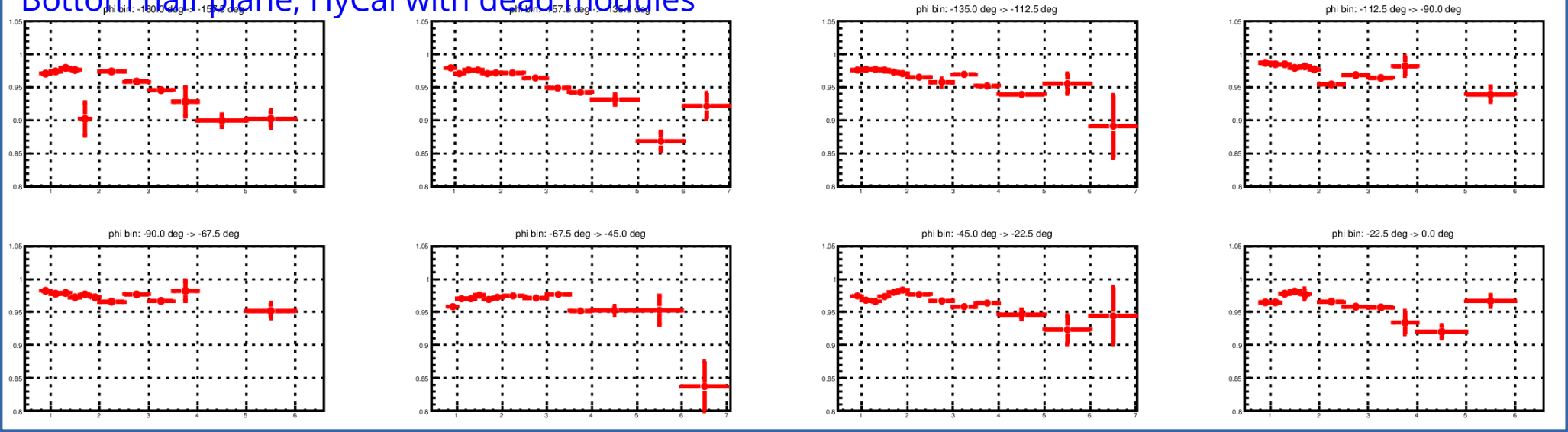


HyCal ep yield over phi



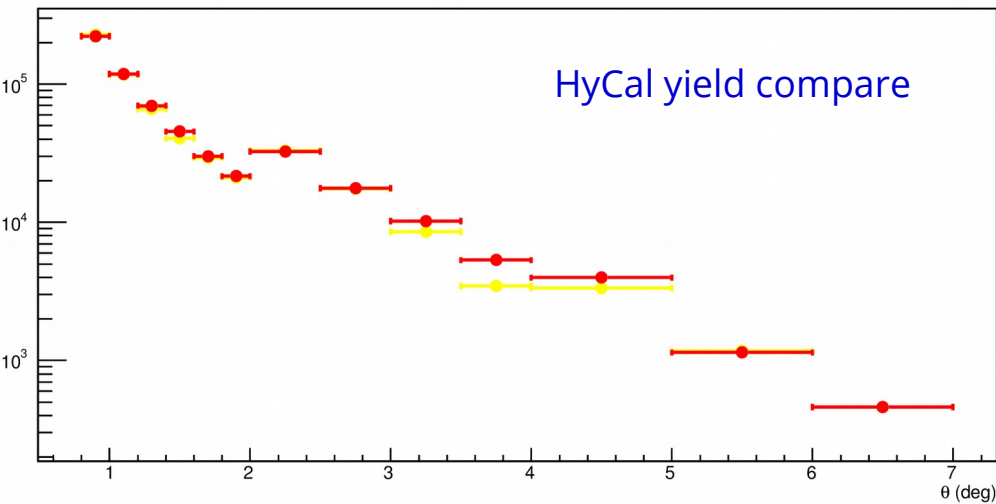
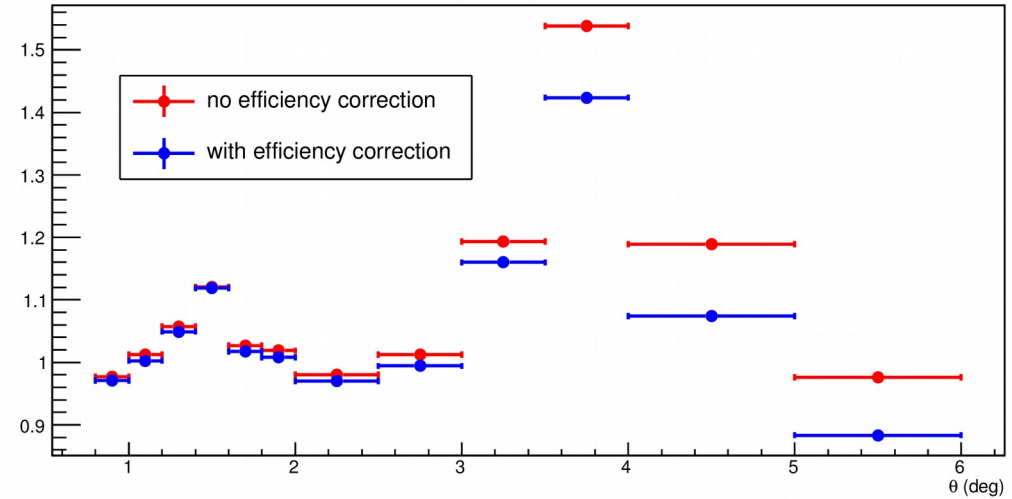
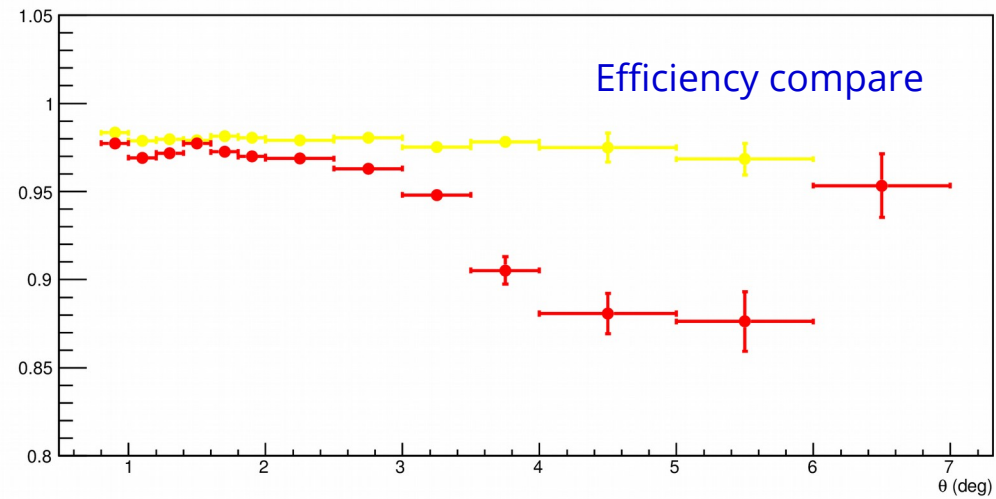
Efficiency in phi bins

Bottom half plane, HyCal with dead modules



Top half plane, HyCal with no dead modules

Efficiency plot has GEM dead area removed
Yield plot with no dead area removal, only from HyCal

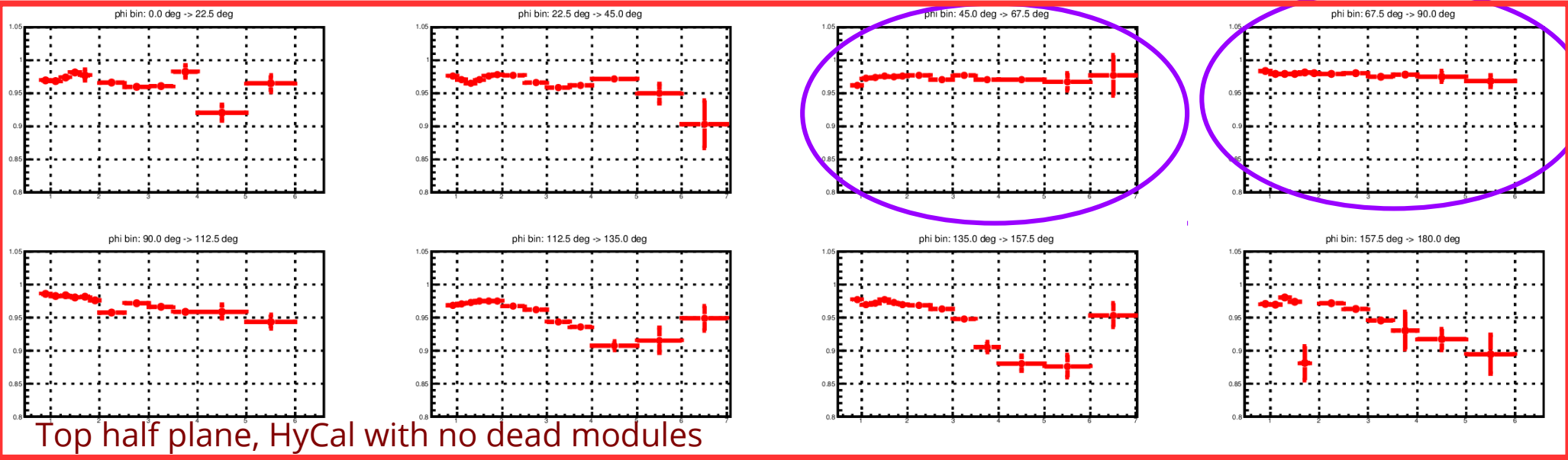
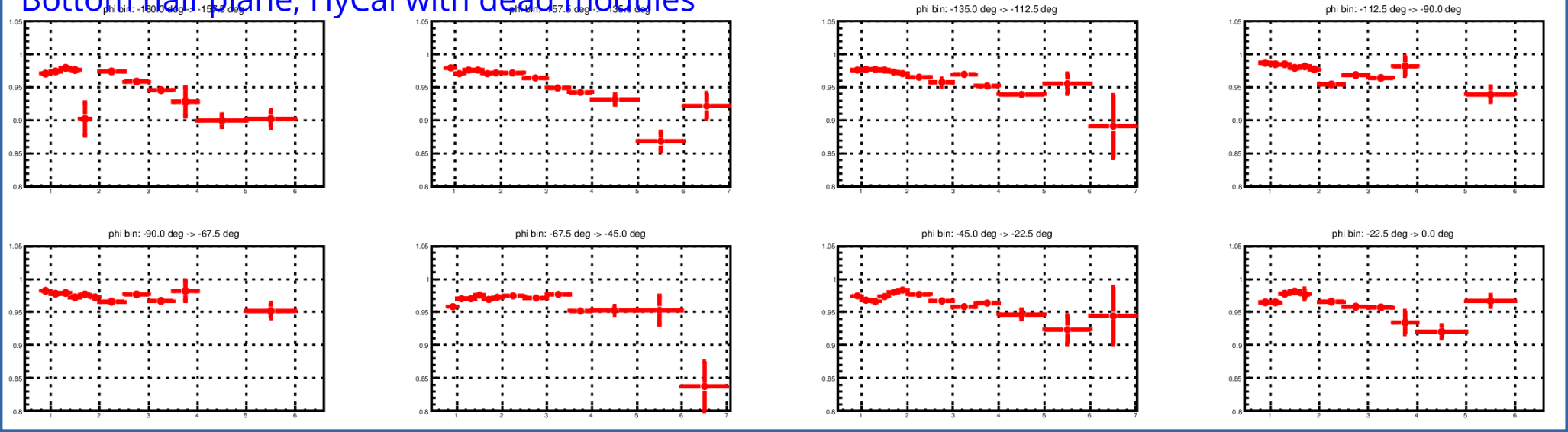


Yield ratio before and after efficiency correction

- For each phi bin, get yield ratio for each theta bin
- For each phi bin, correct GEM efficiency for yield, get yield ratio for each theta bin
- Using e-p events
- When GEM efficiency is low, see a higher yield from HyCal

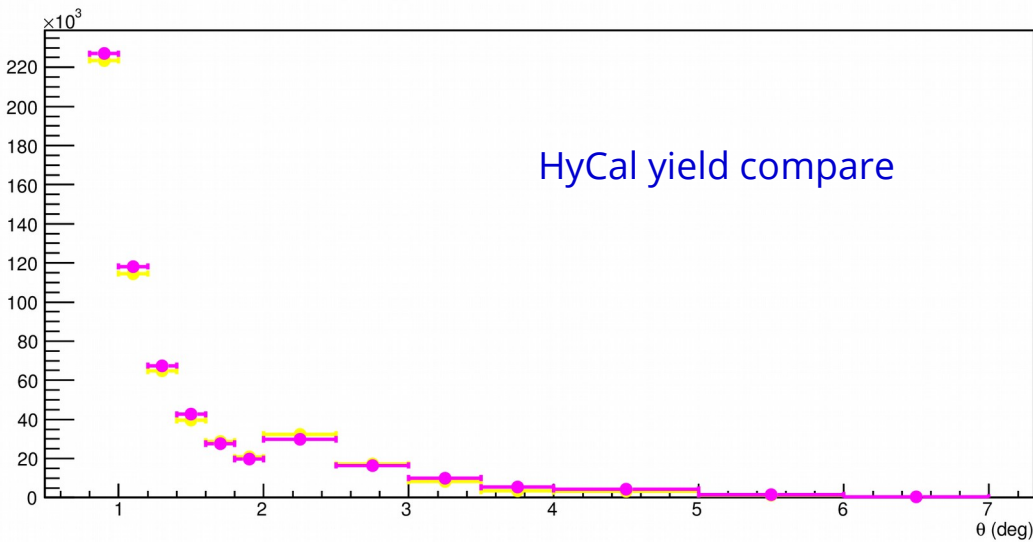
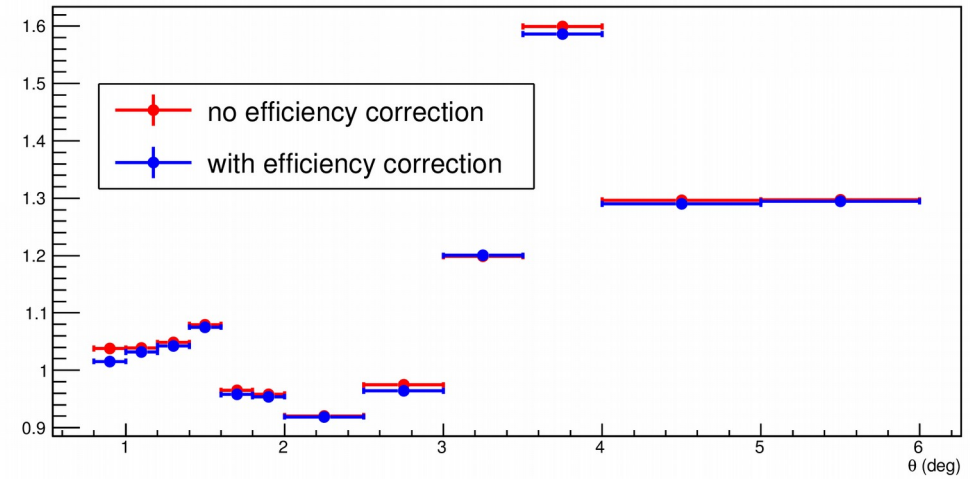
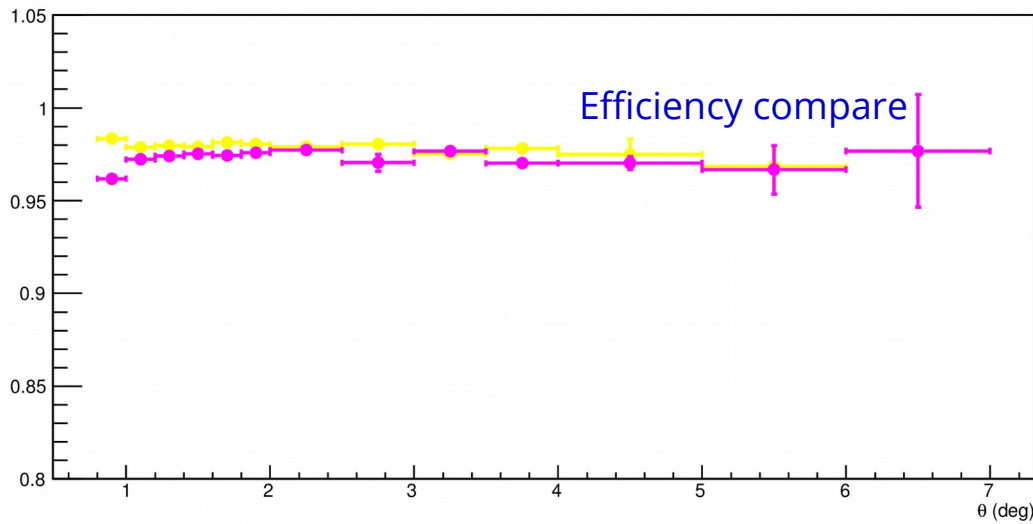
Efficiency in phi bins

Bottom half plane, HyCal with dead modules



Top half plane, HyCal with no dead modules

Efficiency plot has GEM dead area removed
 Yield plot with no dead area removal, only from HyCal

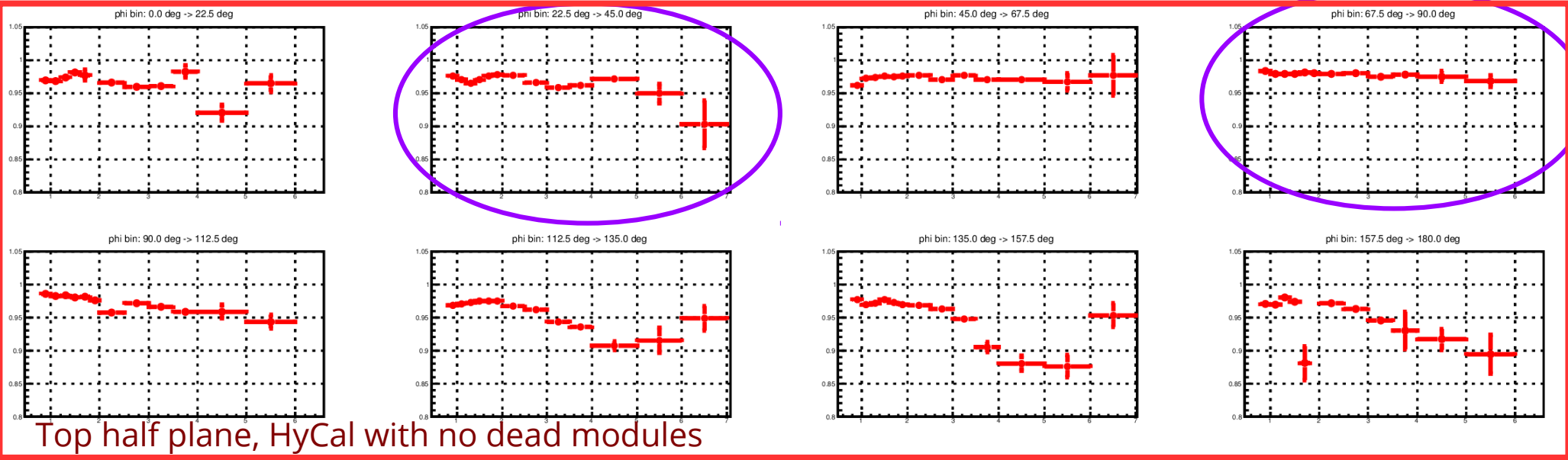
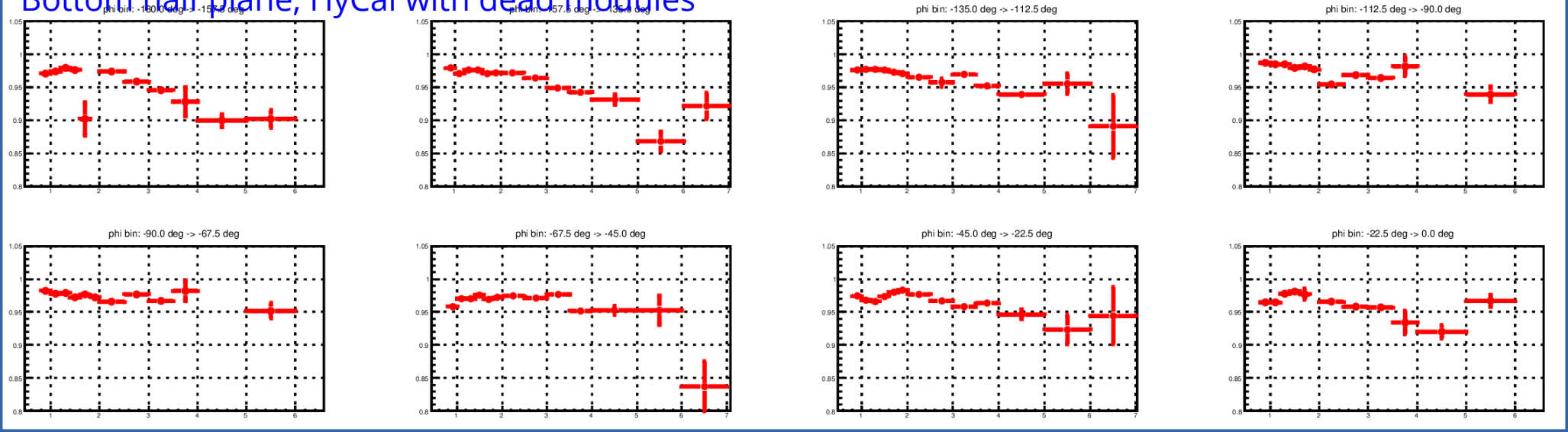


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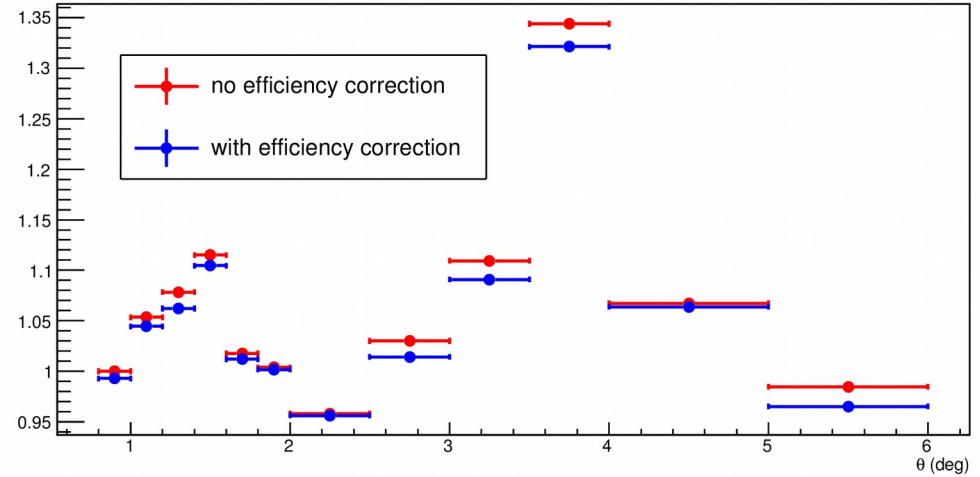
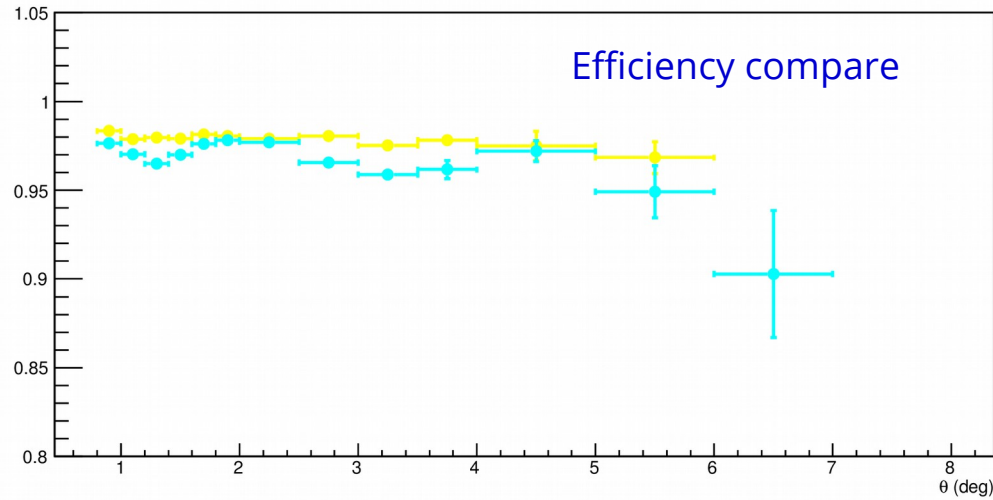
Efficiency in phi bins

Bottom half plane, HyCal with dead modules

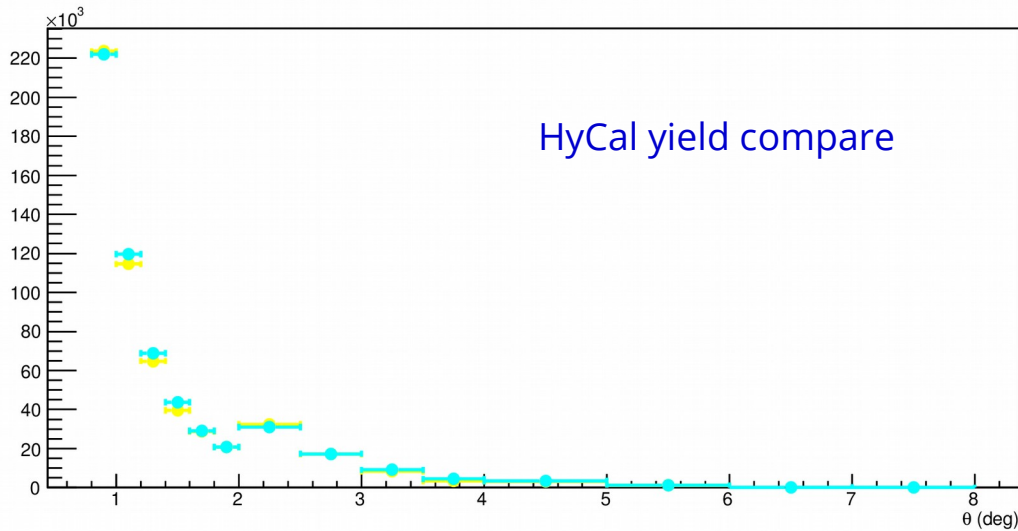


Top half plane, HyCal with no dead modules

Efficiency plot has GEM dead area removed
 Yield plot with no dead area removal, only from HyCal



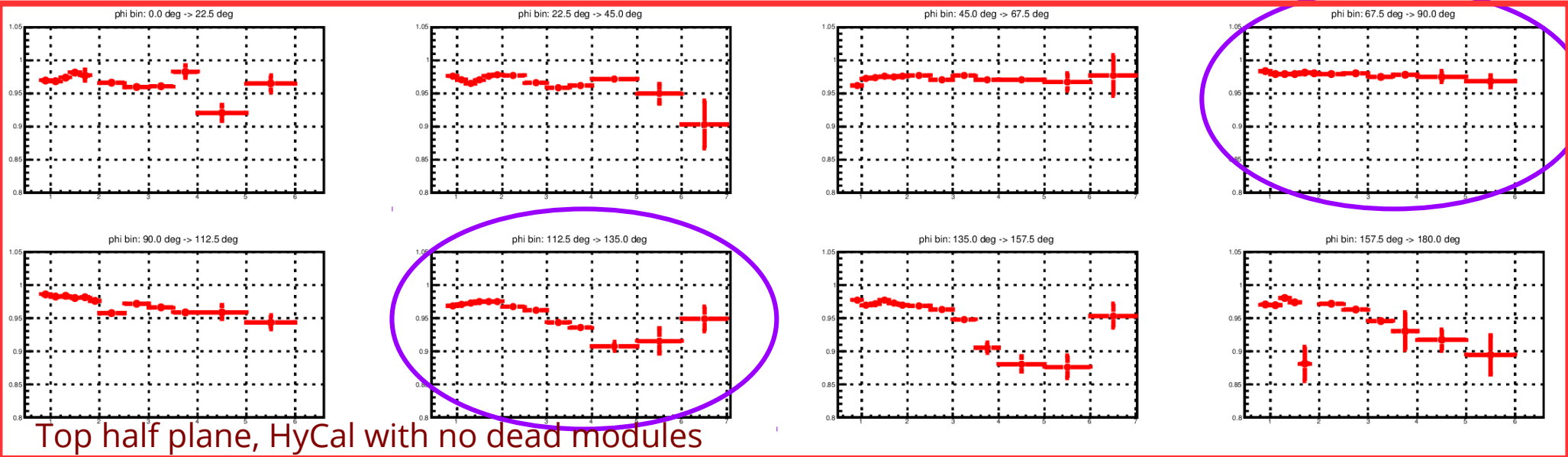
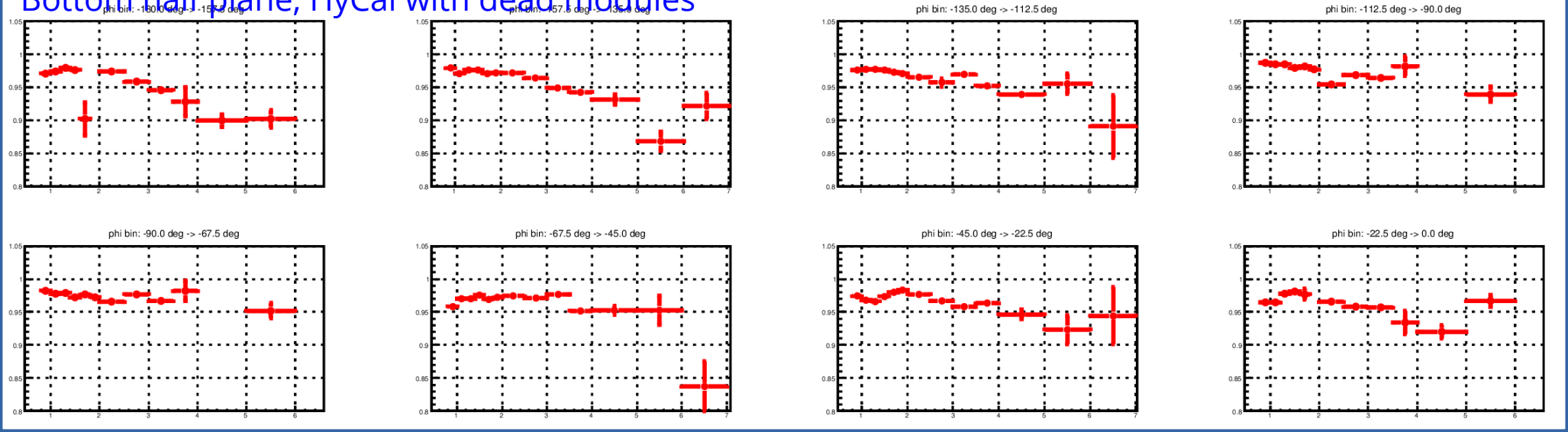
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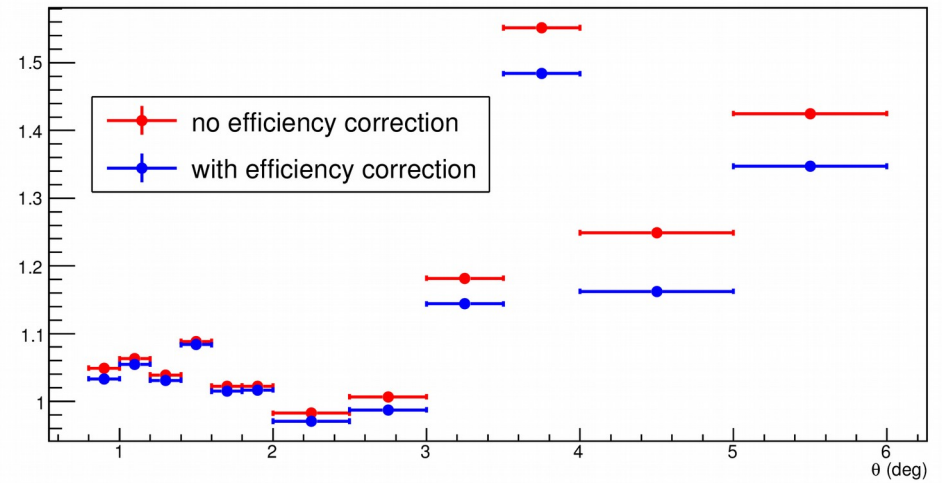
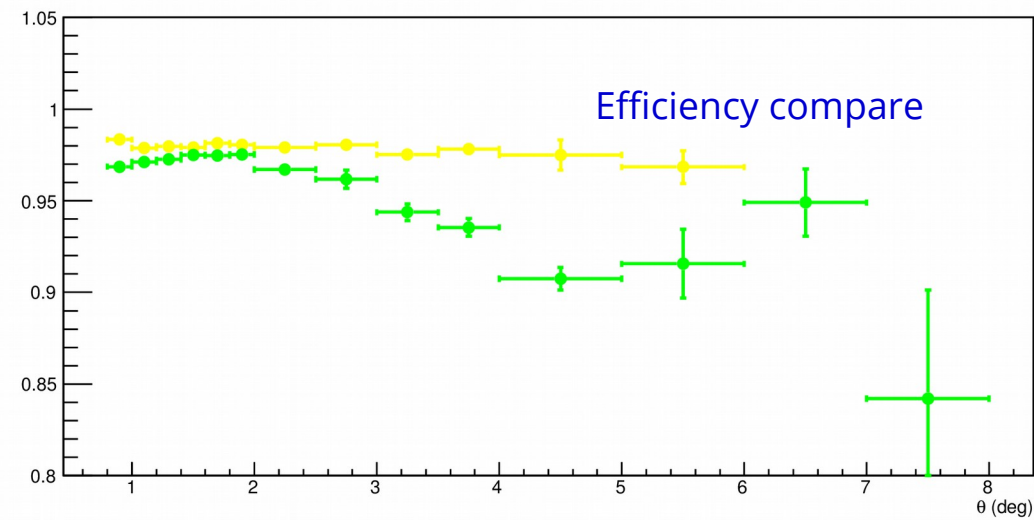
Efficiency in phi bins

Bottom half plane, HyCal with dead modules



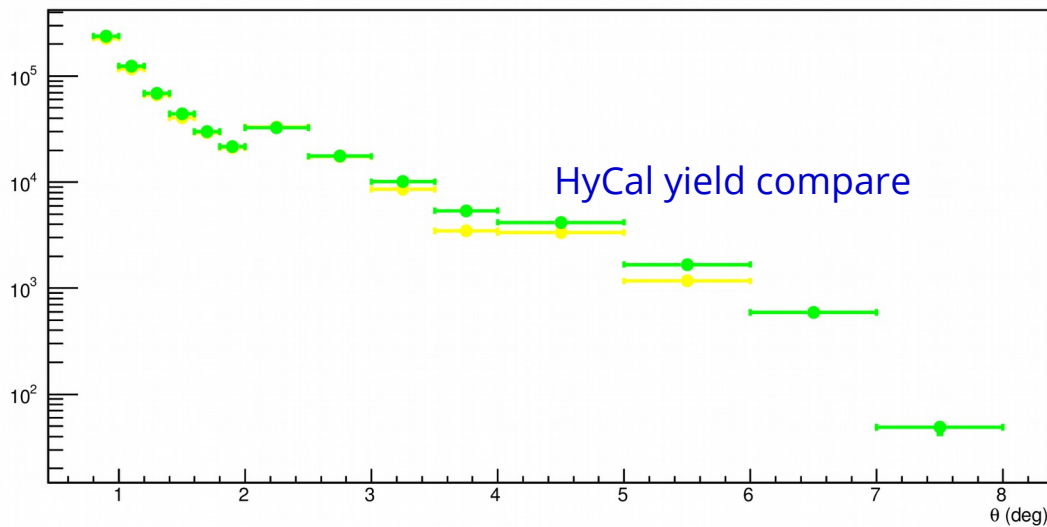
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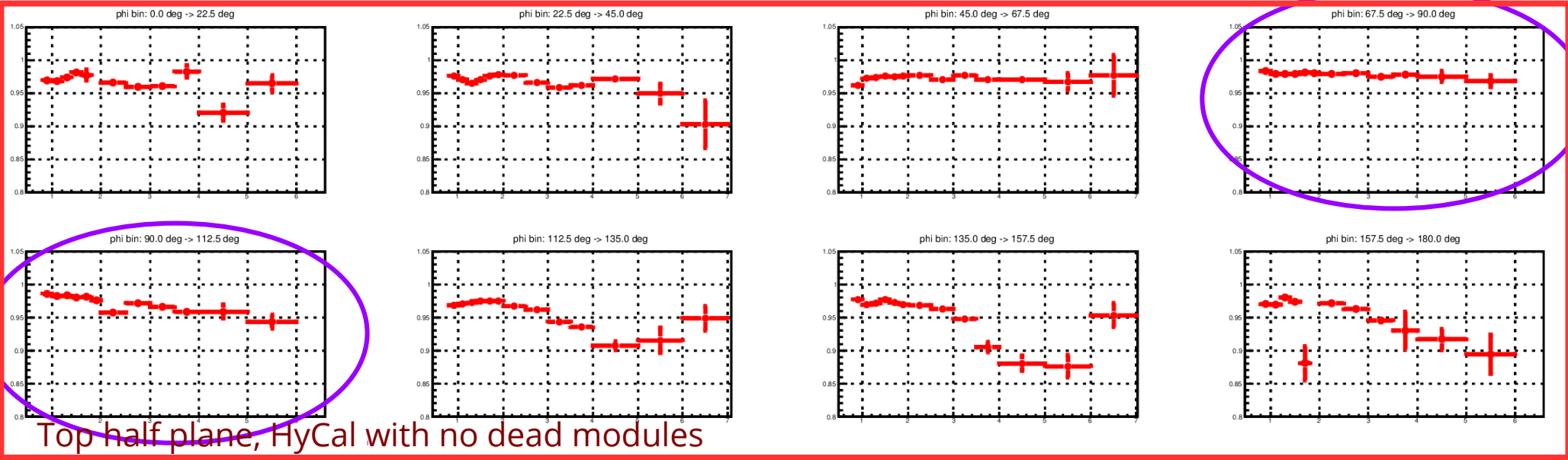
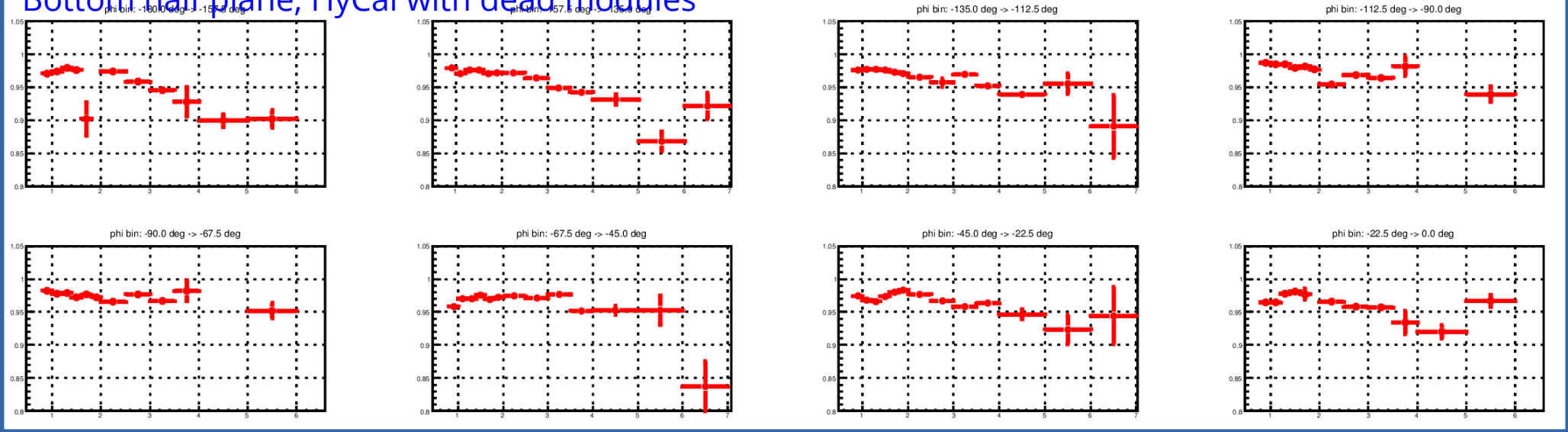
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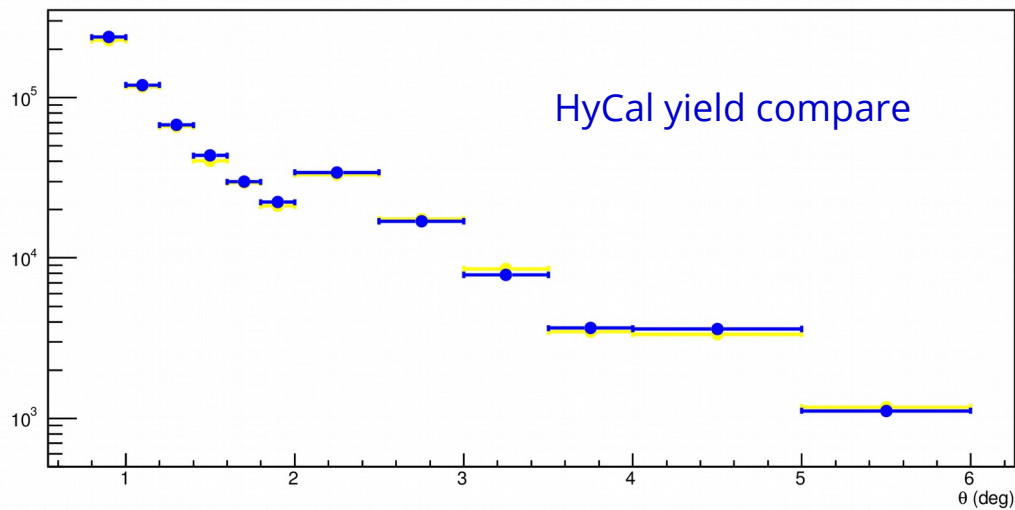
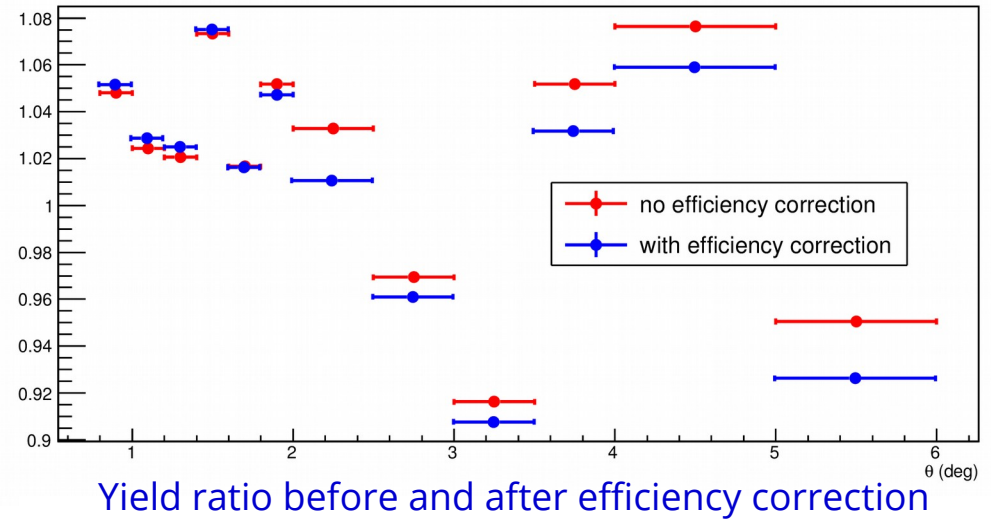
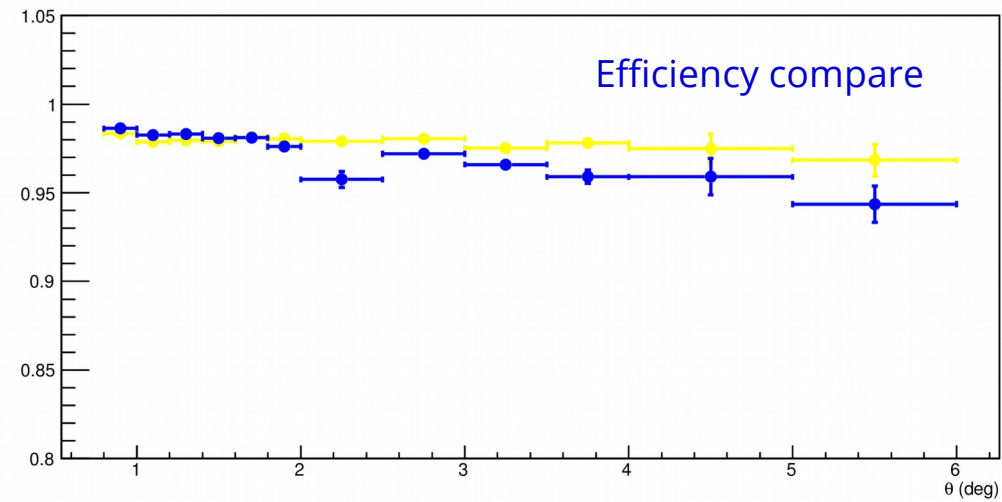


Efficiency in phi bins

Bottom half plane, HyCal with dead modules



Efficiency plot has GEM dead area removed
 Yield plot with no dead area removal, only from HyCal



Preliminary:

- Using e-p events
- Yield is purely from HyCal, not require GEM match
- Usually when GEM efficiency has large discrepancy, yield also has large discrepancy
- When GEM efficiency is low, sees a higher yield from HyCal