Material Scan Plots

Hcal Meeting
Oct 6, 2015

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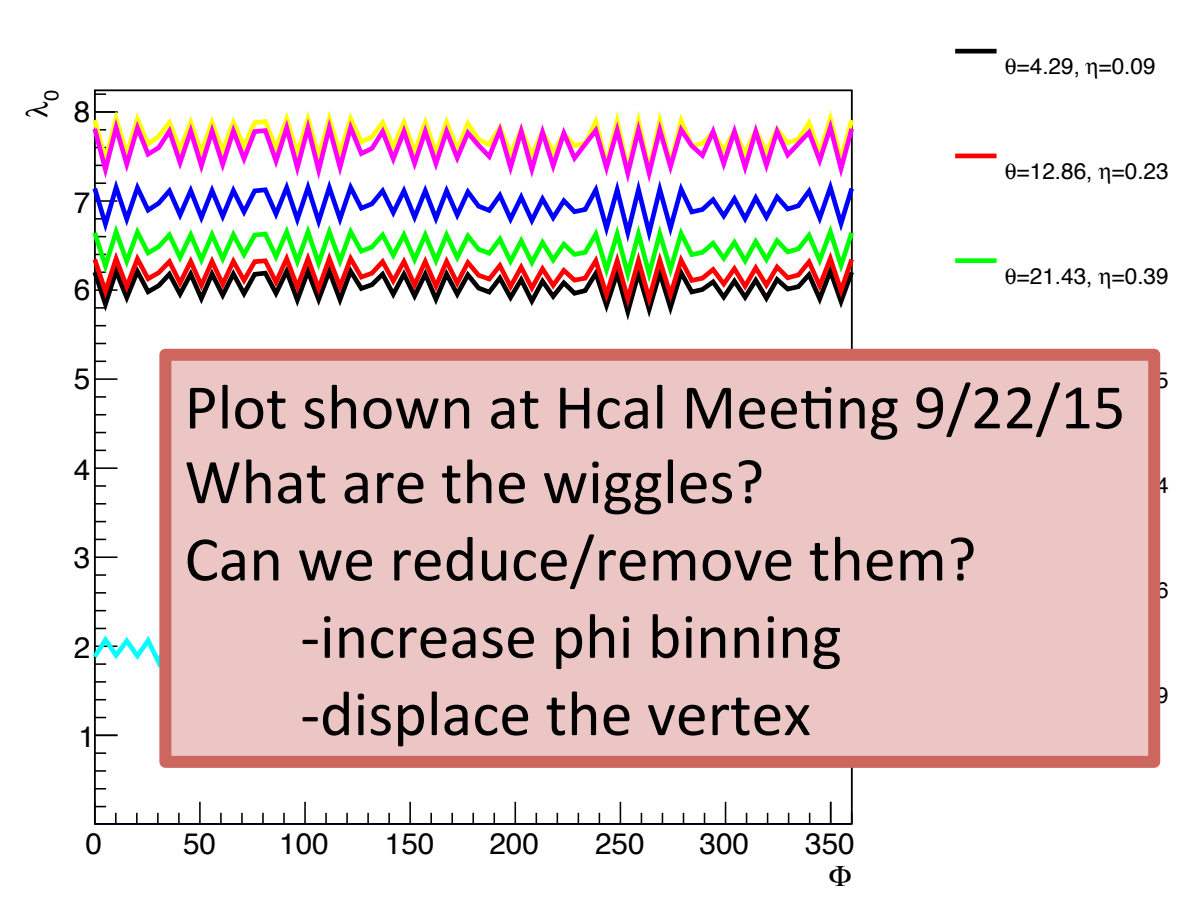
Material Scan vs phi

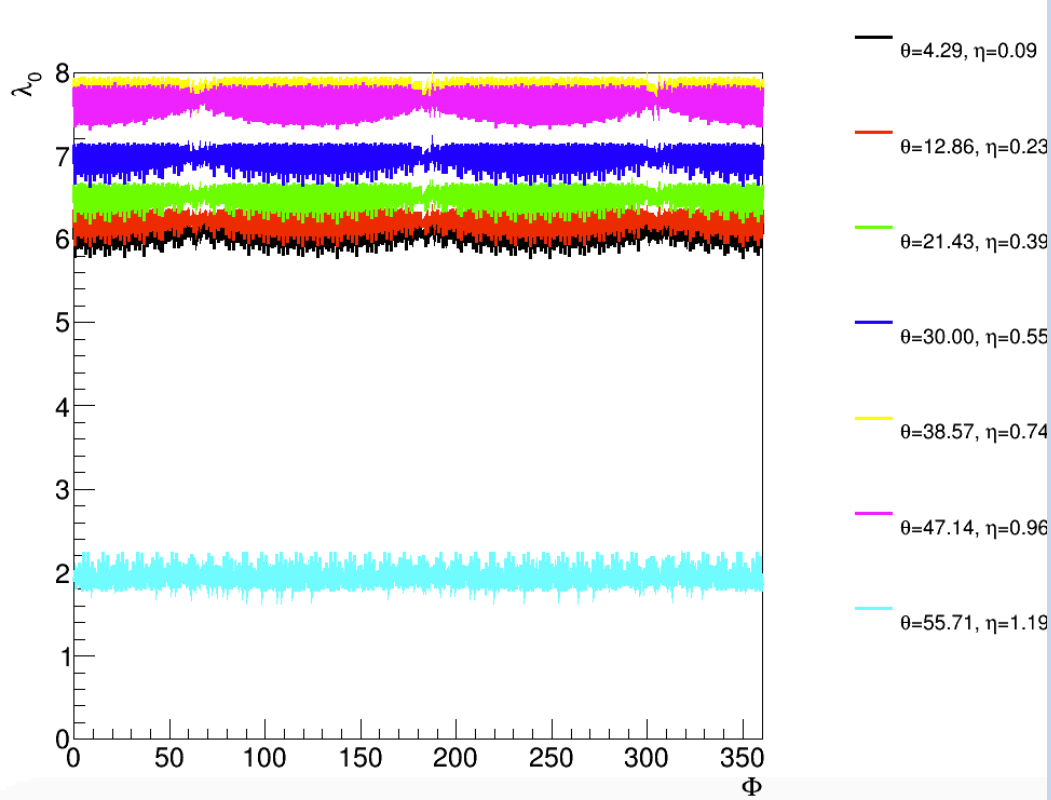
- Includes Emcal, inner and outer Hcals plus magnet
- Inner tilt angle based on Ncross=4

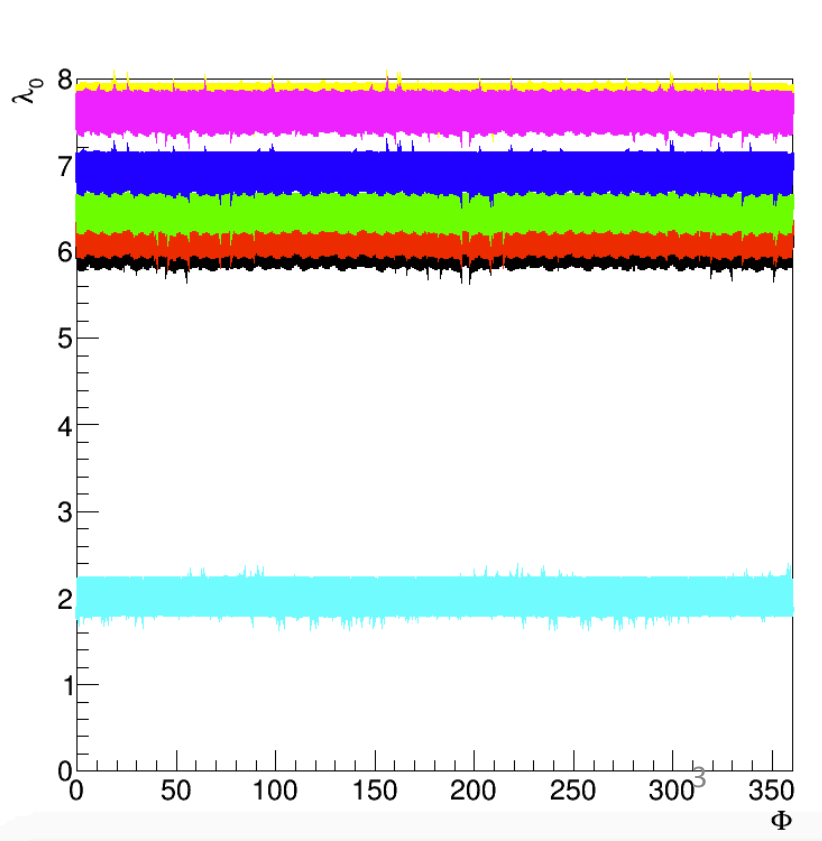


Plot shown at Hcal Meeting 9/22/15
What are the wiggles?
Can we reduce/remove them?
-increase phi binning
-displace the vertex

Focus on Finer binning

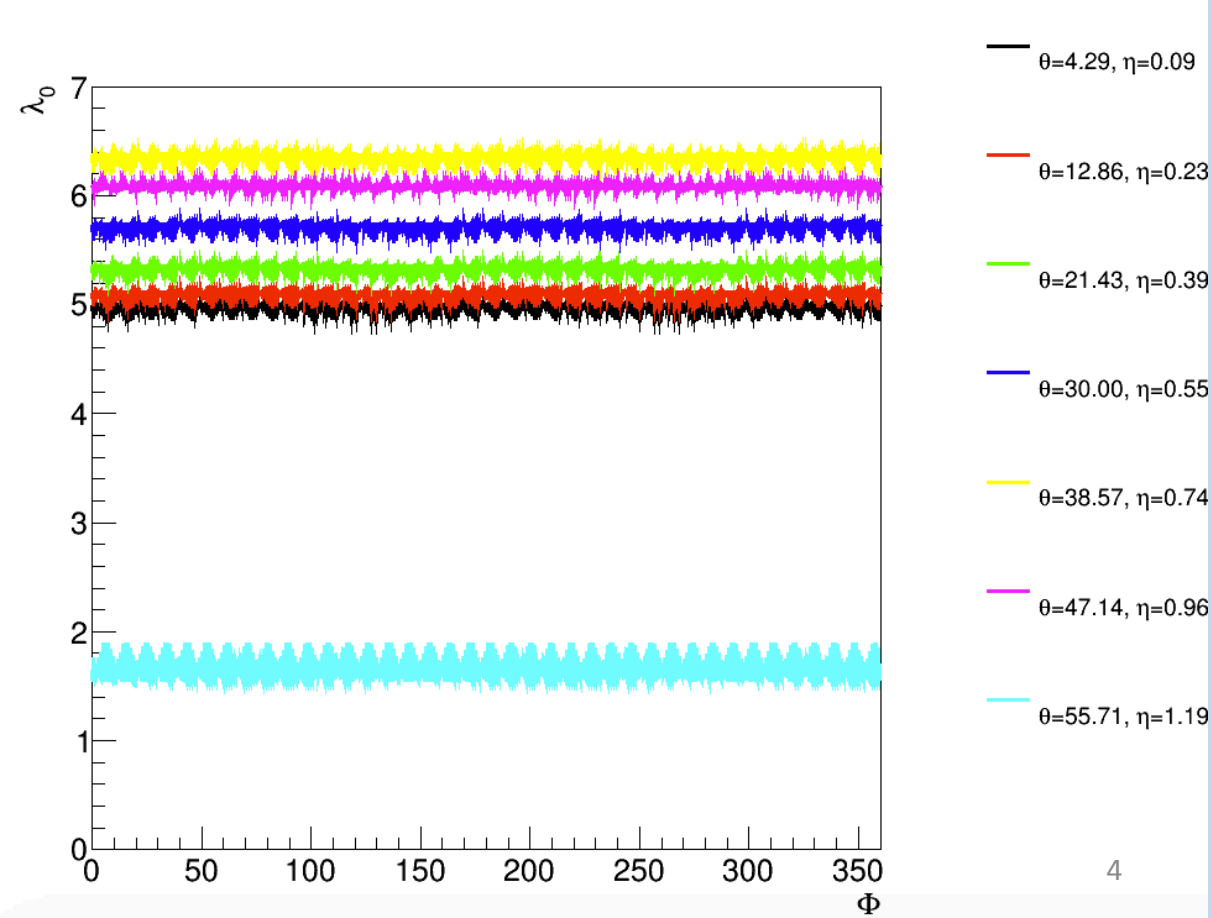
- 1,000 bins to 10,000 phi bins





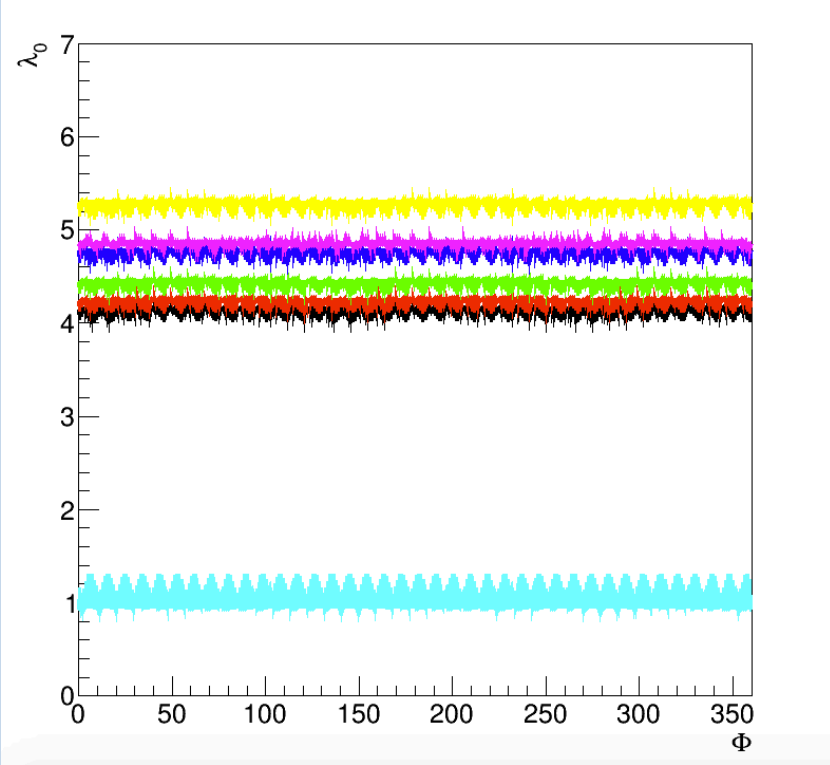
Remove Emcal

- Inner and outer hcal only
- 1k phi bins

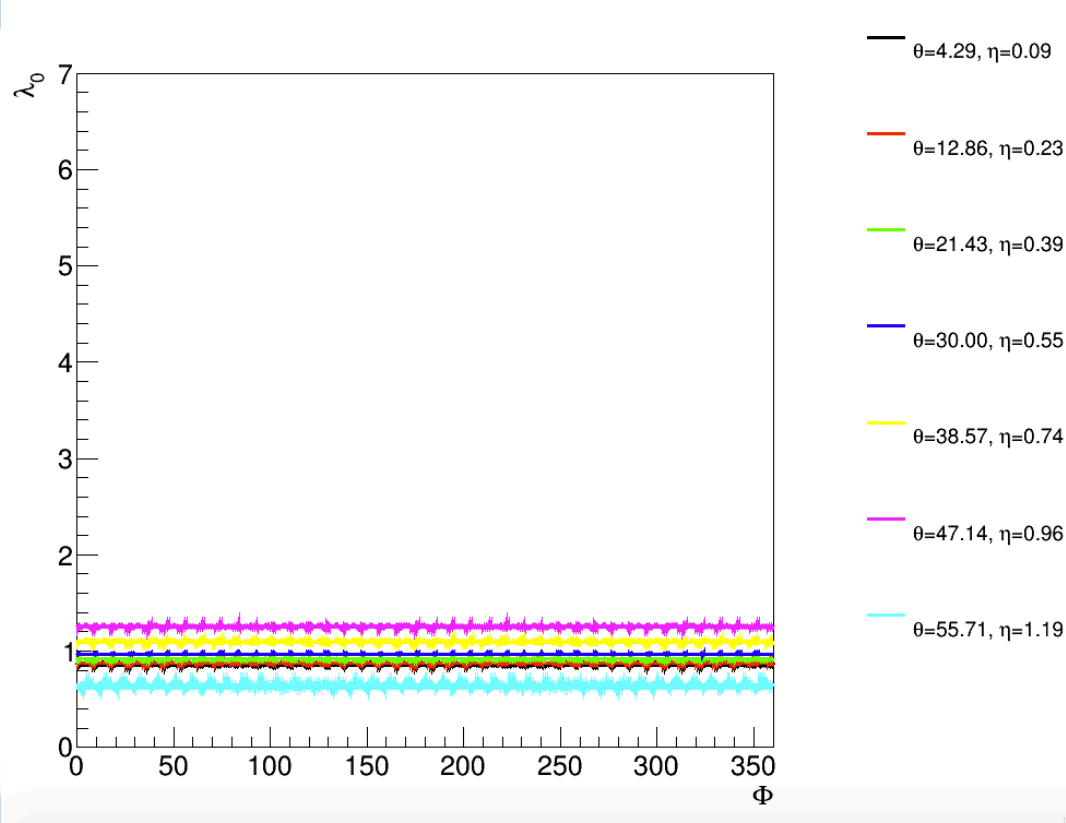


hcals only

- Outer hcal

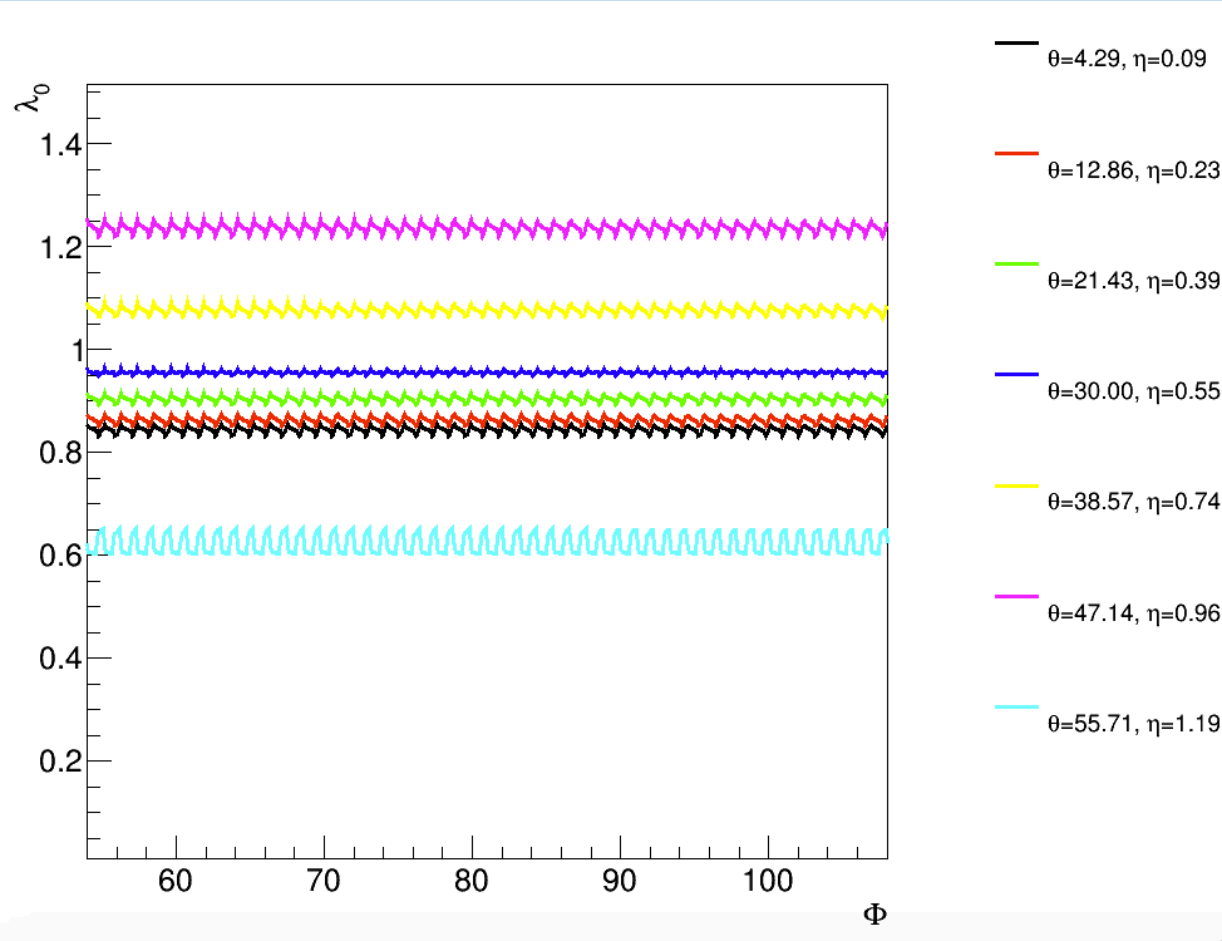


- Inner hcal



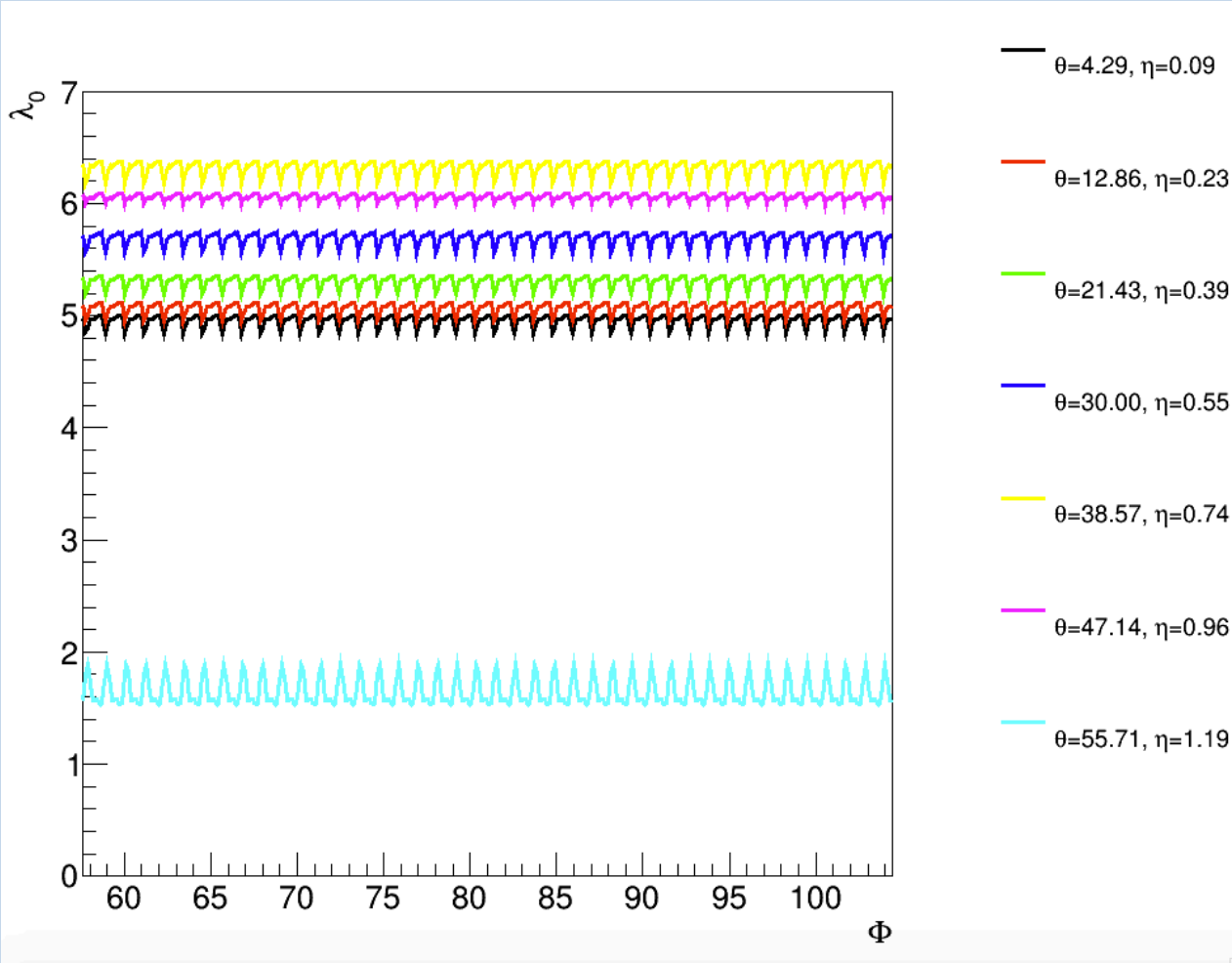
Inner Hcal

- Phi binning in integer multiple of hcal sectors 3840
- Removes beat frequency effect
- Note that this plot was zoomed in
  - Root plotting gives some artifacts when plotted over 360 for such fine binning
- Regular saw tooth structure visible



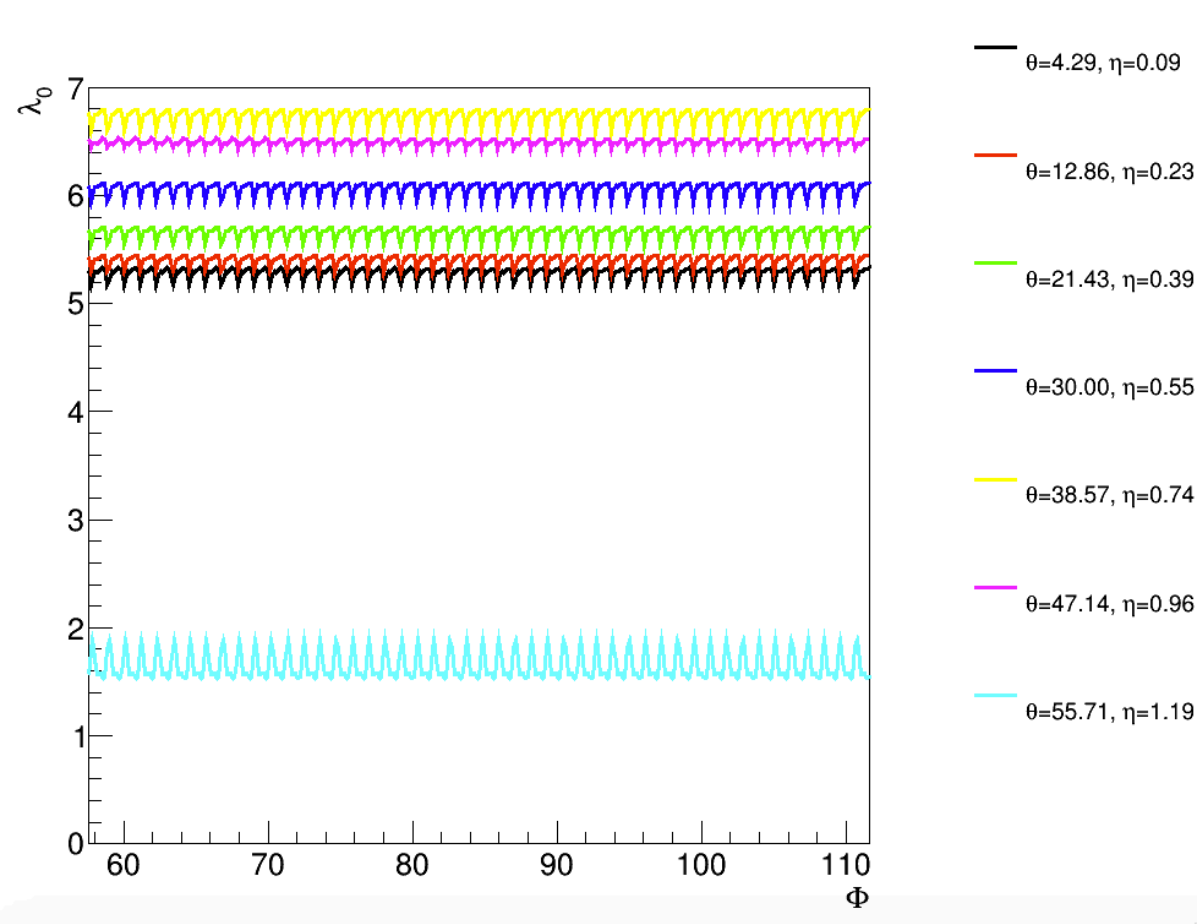
Inner+Outer Hcal

- Saw tooth structure still seen but appears inverted



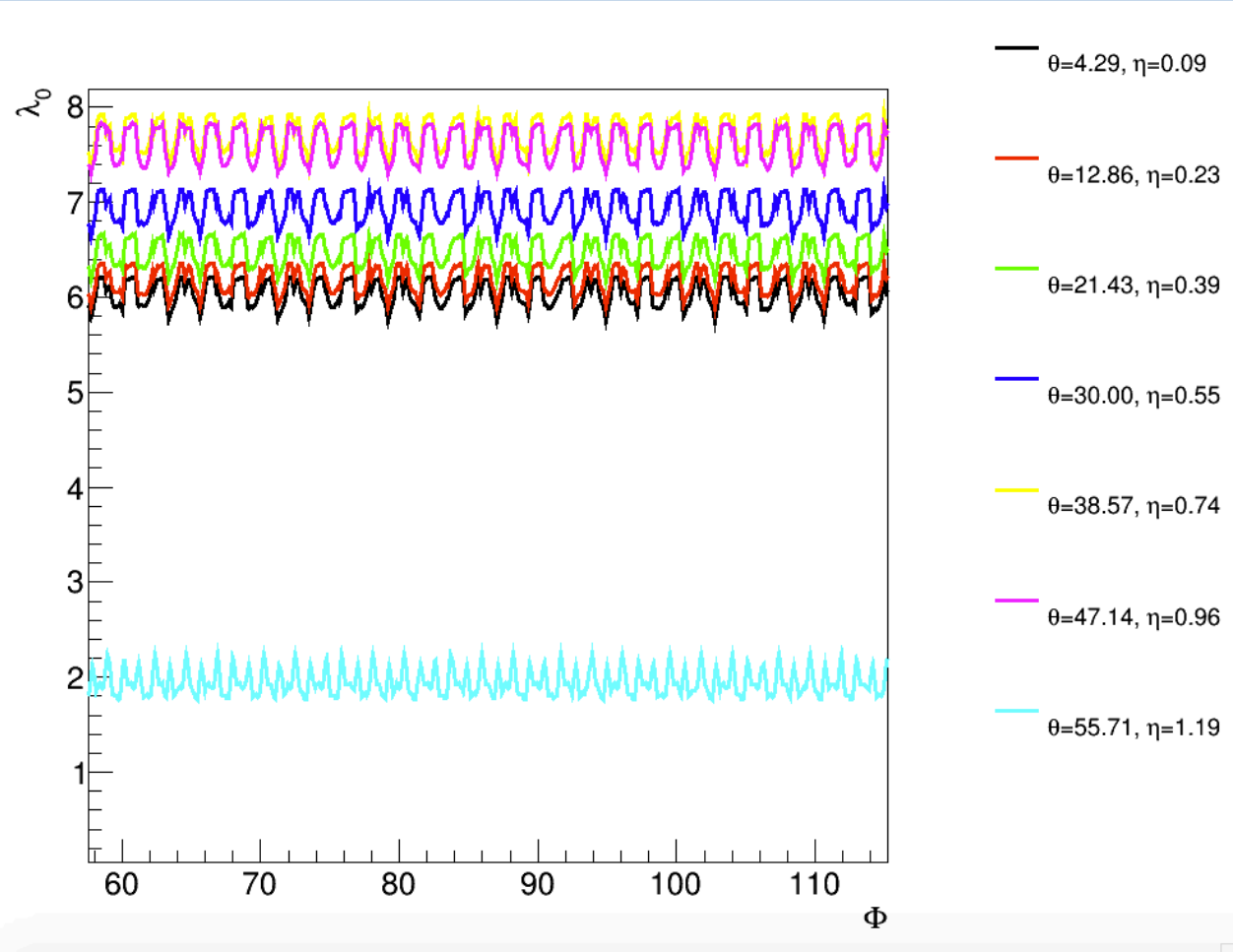
Inner+Outer Hcal + Magnet

- Increases lamda
- No additional structures



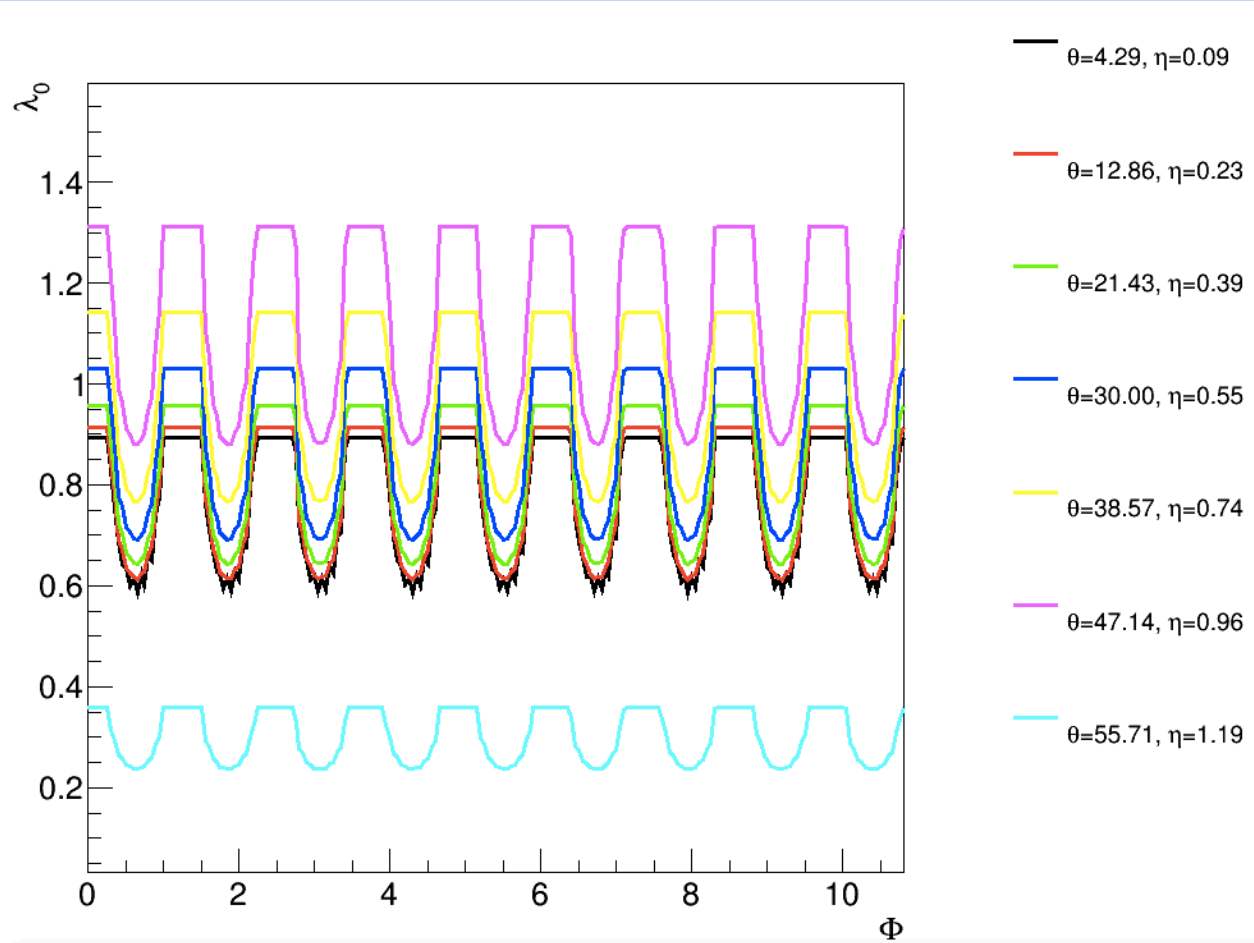
Inner+Outer Hcal + Magnet + Emcal

- Additional structures introduced by Emcal as expected
- Looking into emcal separately with displaced vertices per Jin's suggestion



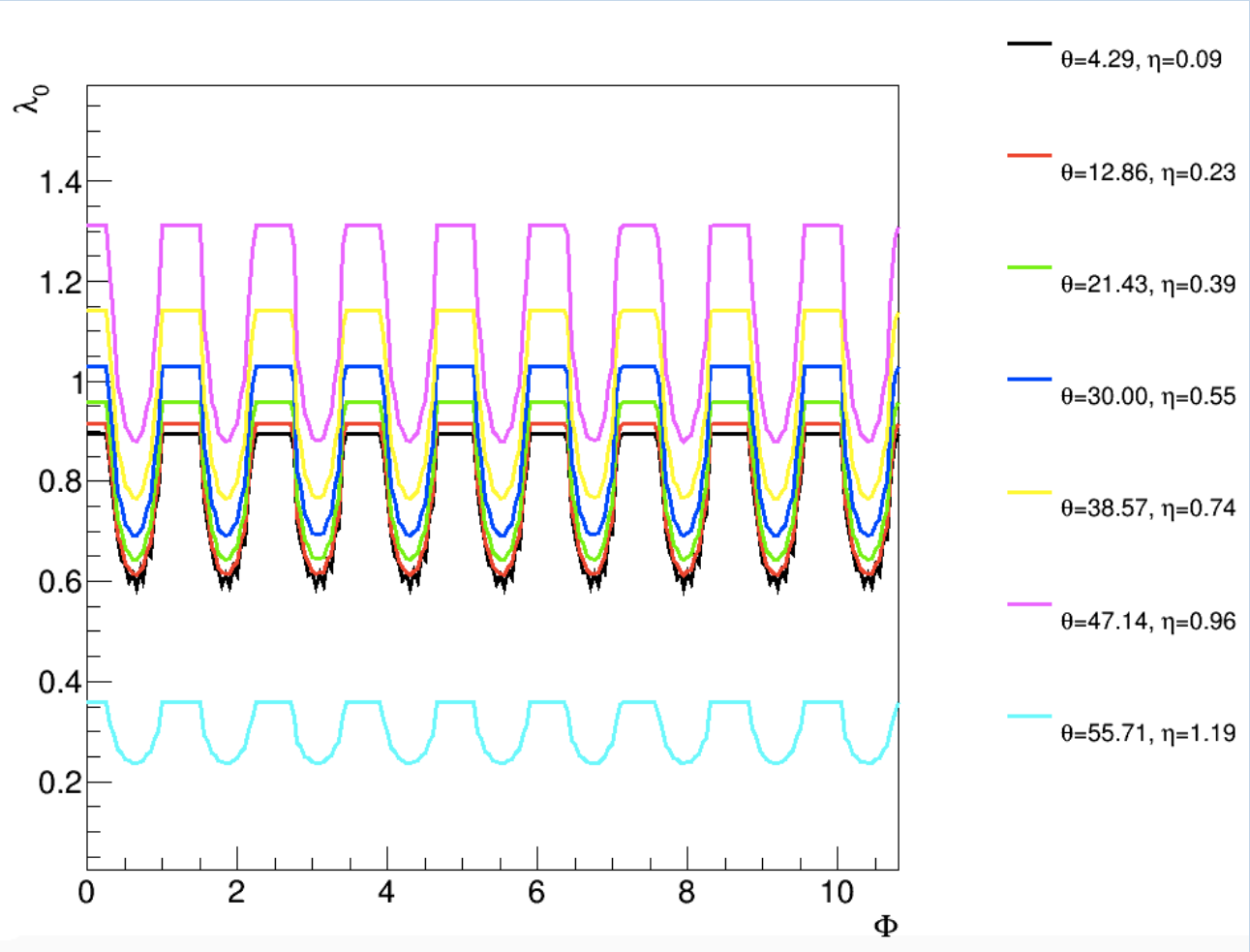
Emcal only

- 7200 bins in 360



Emcal only

- 7200 bins in 360
- Fun4All_G4_sPHENIX.C:
  - Gen->set_vertex_distribution_mean()5,0,5;



Observations

- Displaced vertex has little effect
  - Try more displacement values?
  - Right place in the code?
- Should use binning consistent with detector geometry
  - Zoom in to see regular pattern
- Removing the Emcal reduces the effect but this effect appears to be present for all detectors
- Details are not so important for pCDR
  - Just show vs eta plot?
  - Show small phi slice?
  - but should be understood
- To Do:
  - Polish off the tilt angle study plots for pCDR
  - Anything else?