九州大学
KYUSHU UNIVERSITY

international linear collider

Progress Report of Optimization of Si and Hybrid ECAL

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CALICE
Calorimeter for ILC

Kyushu University RCAPP

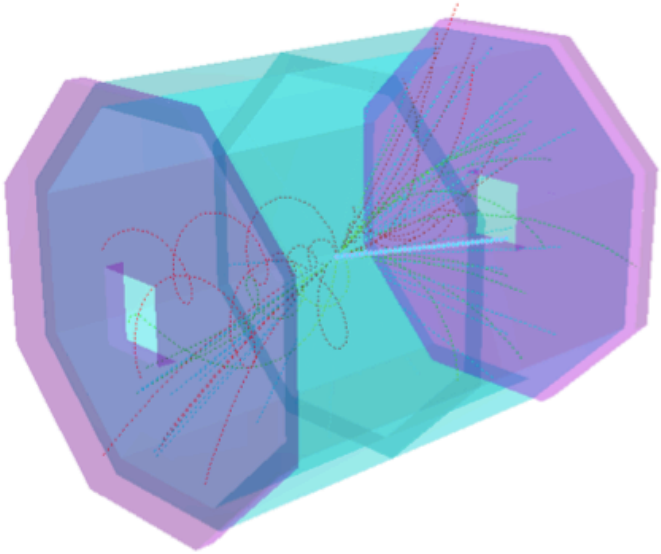
This time …

- I focused on confusion term with changed the cell size of silicon and calibration parameters in PandoraPFA and PerfectPFA
- Cell size : 3.0, 5.0, 7.5, 10.0, 15.0, 20.0 mm
- Calibration parameters were changed with 3 ways
  - Both PandoraPFA and PerfectPFA use my PandoraPFA calibration parameters
  - PandoraPFA and PerfectPFA use each my calibration parameters
  - Both PandoraPFA and PerfectPFA use default calibration parameters

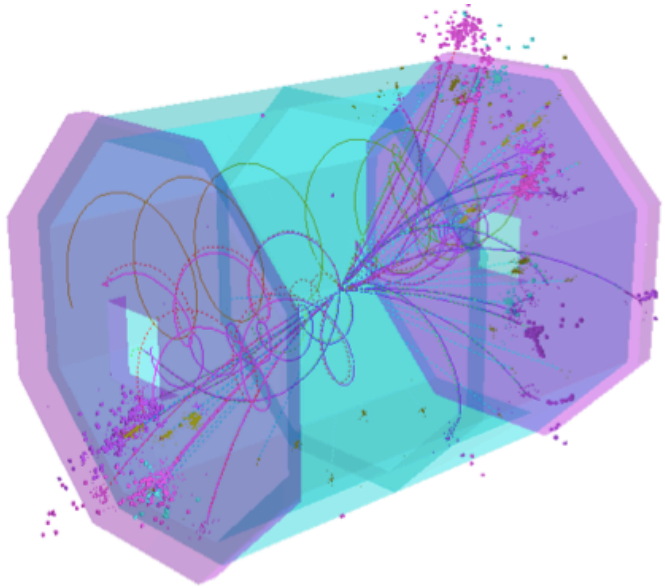
Perfect PFA

by John's slide

- collect together hits and tracks associated with each MC PFO target (MC particle with vertex radius < 500mm and endpoint radius > 500mm), then use reconstructed hit/track properties to calculate PFO energies.



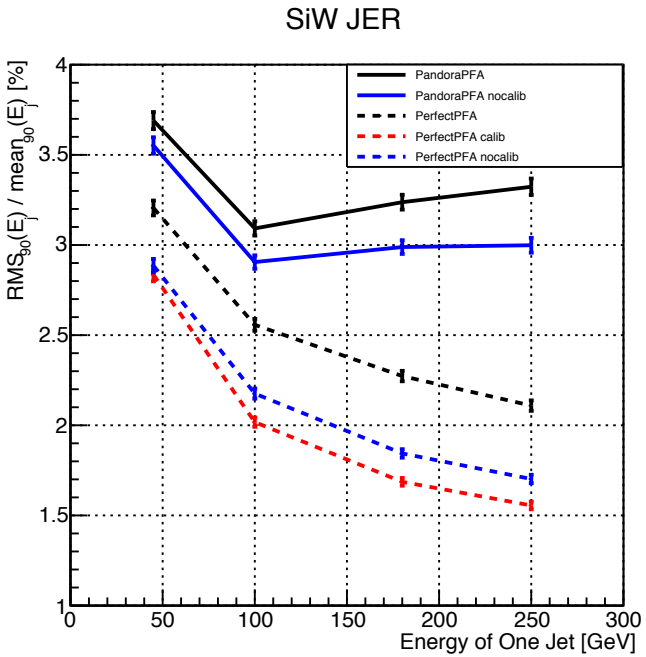
Basic trajectories of MC PFO targets in a 200GeV Z' event.

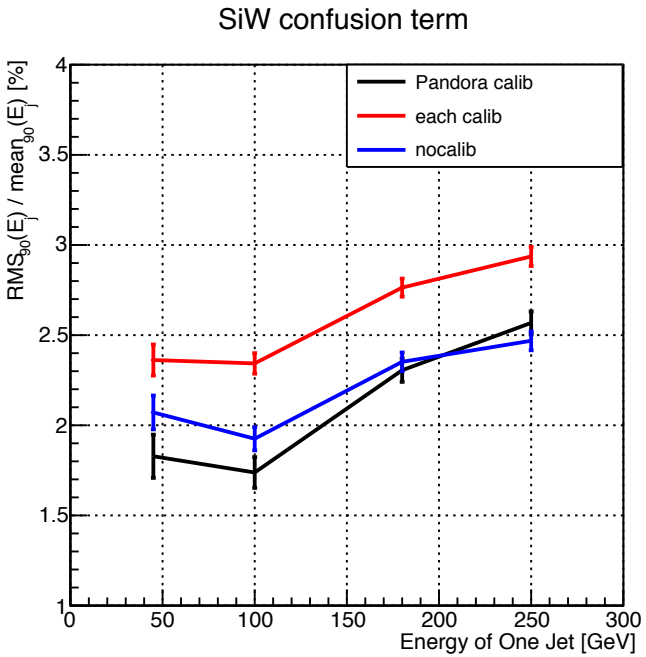


PFOs formed by collecting together energy deposits from individual MC PFO targets.

JER and Confusion Term with Each Calibration Parameters

- configuration : SiW ECAL (silicon 0.5 mm)
  - W 20 layers x 2.1 mm (forward region)
  - W 9 layers x 4.2 mm (backward region)





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: PandoraPFA with default calibration parameters
: PerfectPFA with my PandoraPFA calibration parameters
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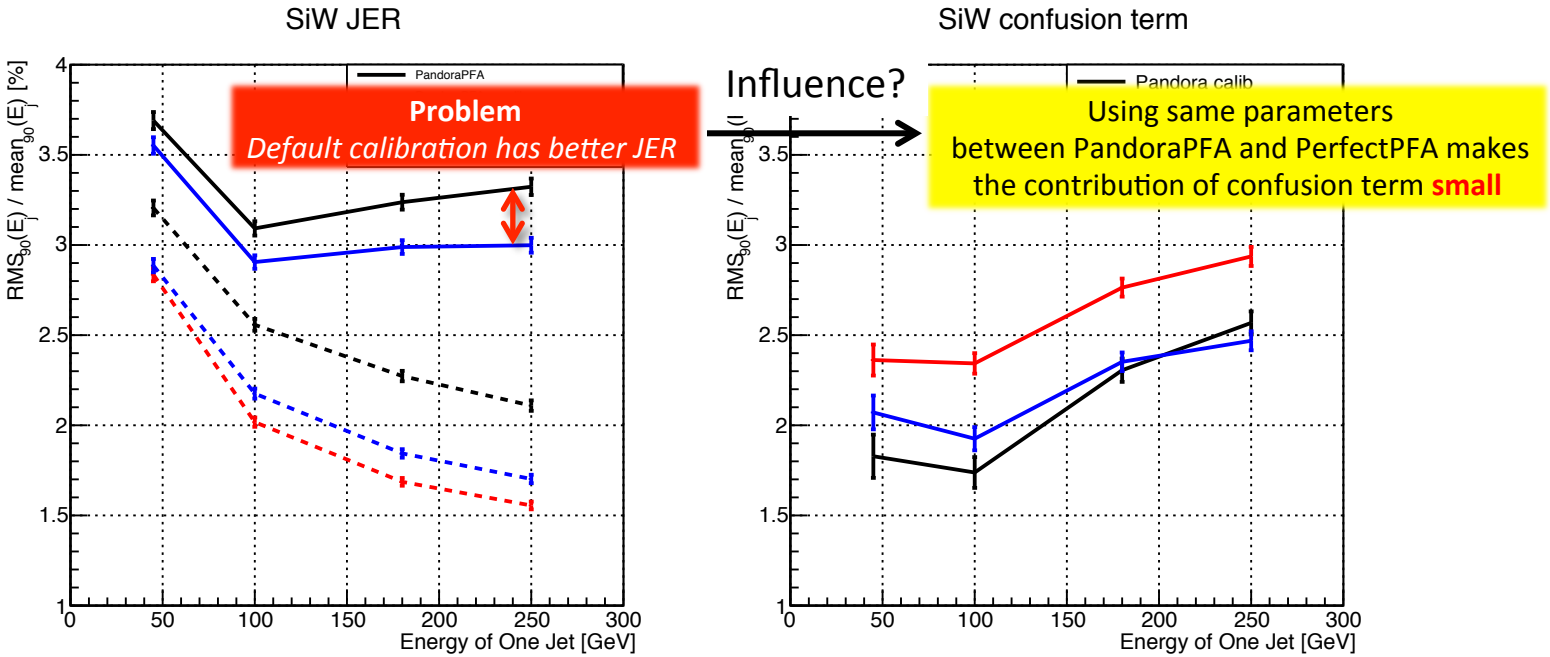

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JER and Confusion Term vs. Cell Size

- I did this study if its result corresponded with that of previous study
- I used my PandoraPFA calibration parameters in both Pandora and Perfect PFA for each cell size
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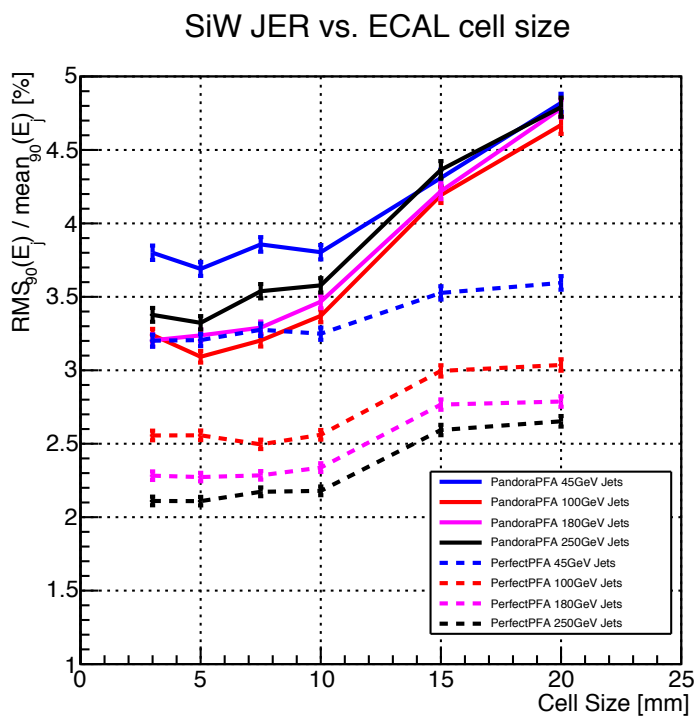

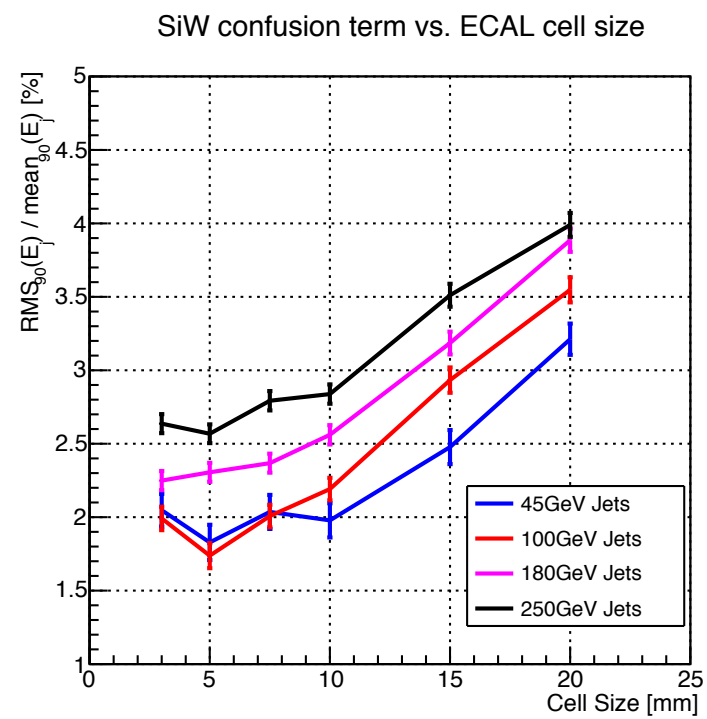

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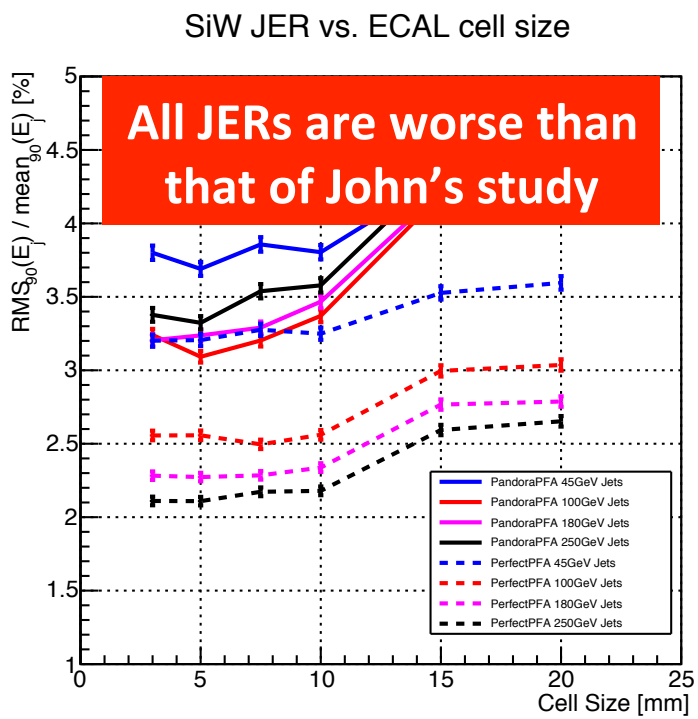

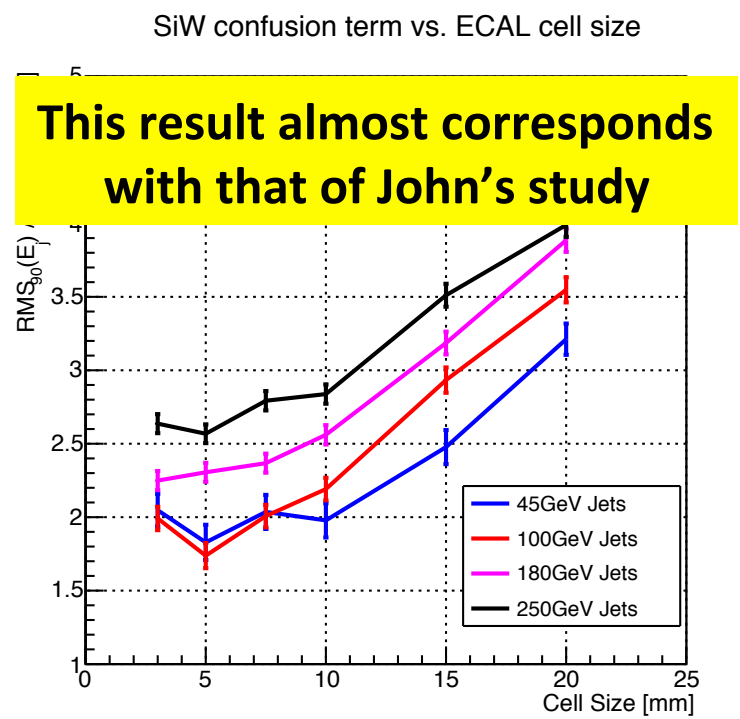

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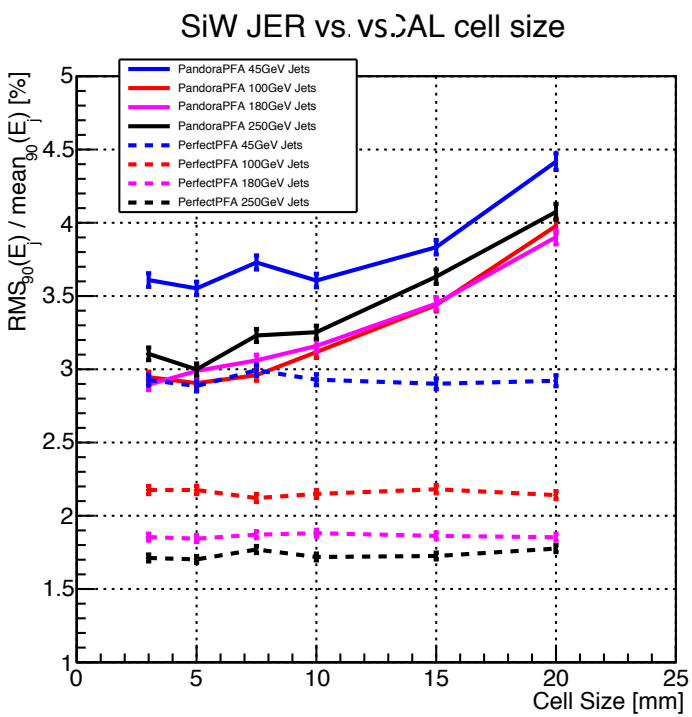

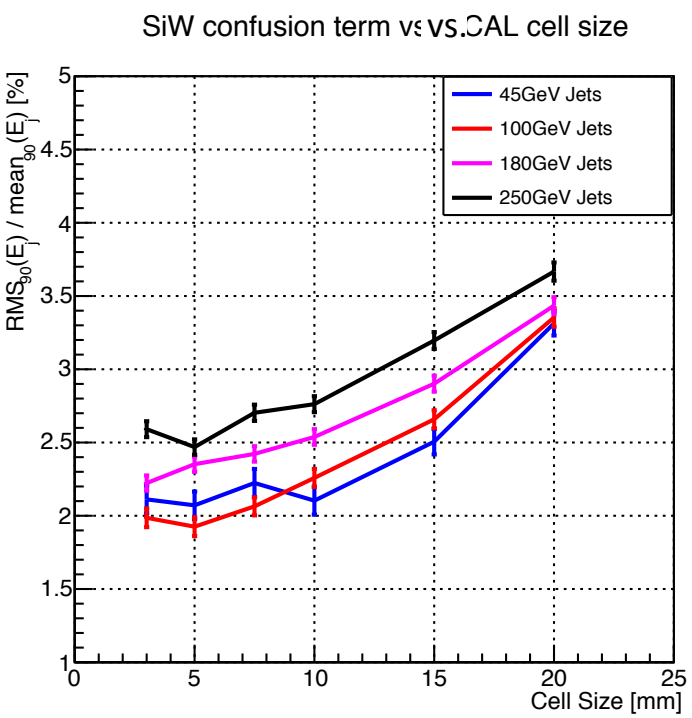

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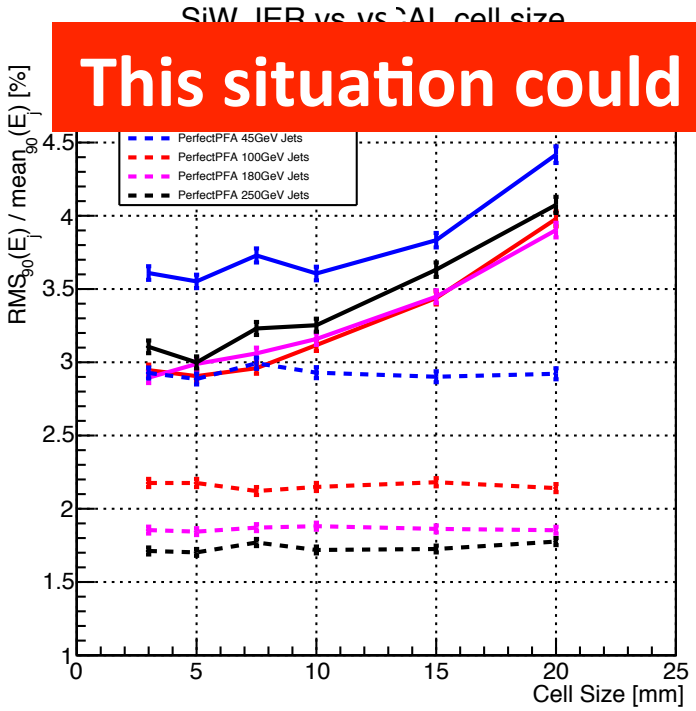
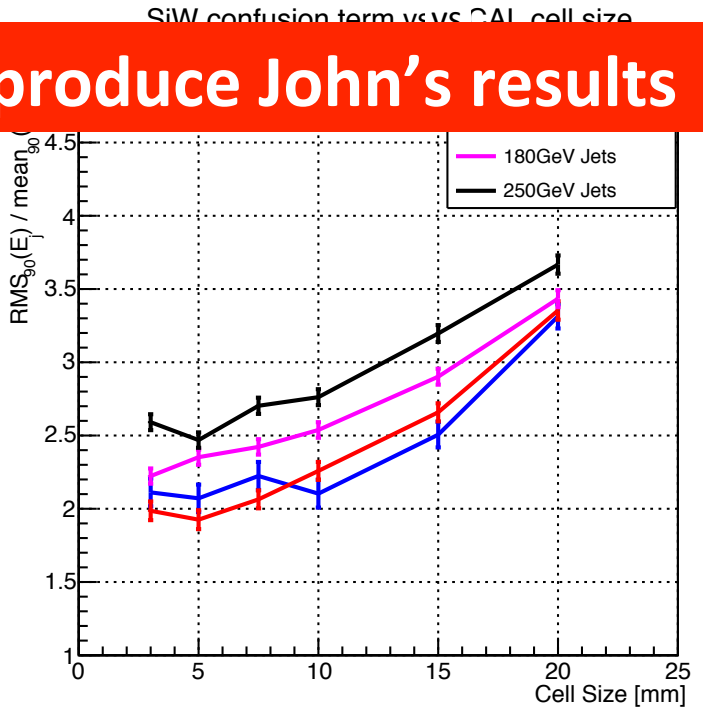
This situation could reproduce John's results





Outlook

- I will find solutions to the calibration problem

- I will study about the confusion term for following configuration
  - *All W thickness are the same*
  - *The location of the boundary between inner and outer region is changed*