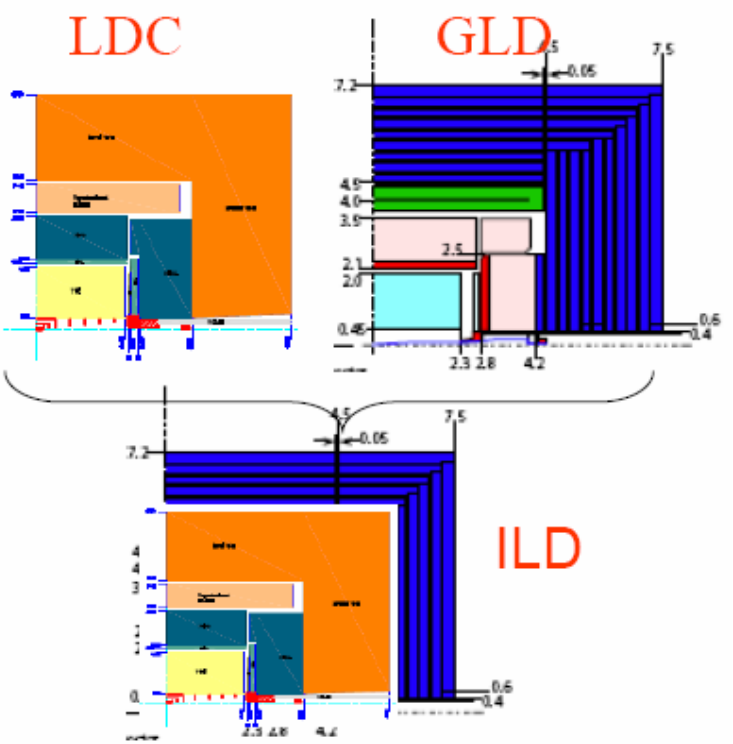


CALICE
Calorimeter for ILC

and detector concepts

Felix Sefkow

DESY

ALCPG07 Meeting at Fermilab
Oct 22-26, 2007

The CALICE mission

- Propose the best possible calorimeter system for the ILC
  - consider ECAL and HCAL (and TCMT) together
  - physics prototypes and technical prototypes

- Physics prototypes
  - validate simulations on PFLOW-relevant observables
  - develop and test PFLOW reconstruction algorithms
  - needed for each technology (e.g. scintillator and gas)

- Technical prototypes
  - address integration issues
  - provide basis for cost estimates
  - evidently needed for each technology

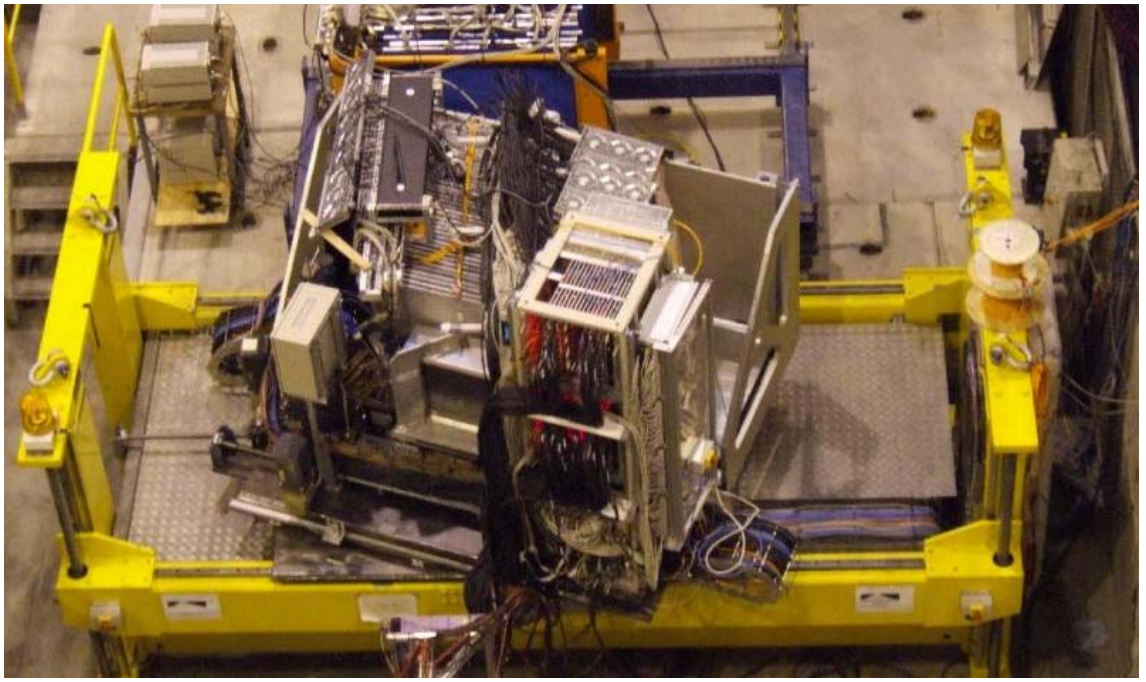
Not part of mission:

- validate the PFLOW approach
  - depends on overall detector concept and tracking performance

- technology choices
  - provide necessary input
    - operational experience, performance, cost
  - if different strong and weak points, choice depends on concept
  - if show stoppers, choice is obsolete

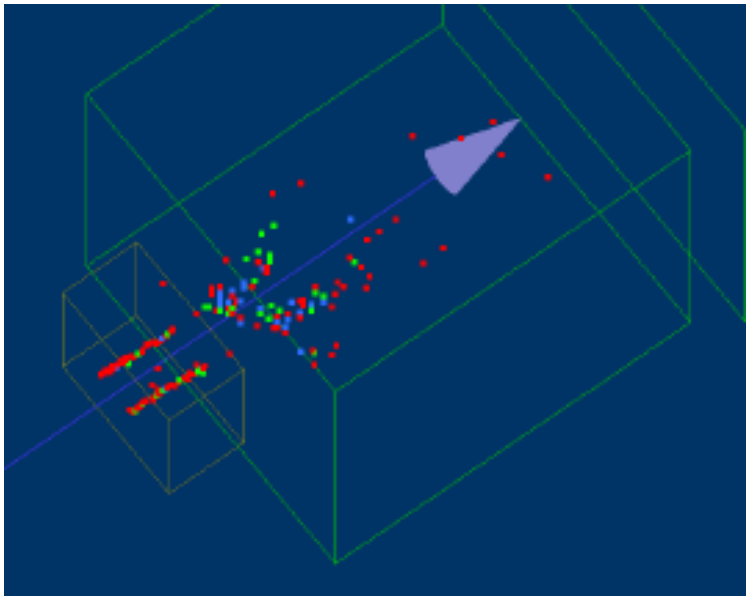
Test beam mission

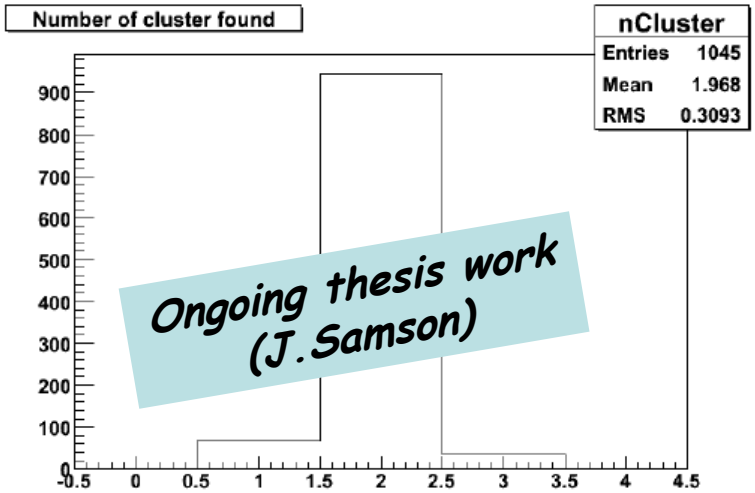
- strong synergy from shared infrastructure
  - mechanics, DAQ, software, analysis
- half-way completed: SiW ECAL + SciFe HCAL 10-100 GeV
- missing:
- 1-10 GeV 2008
- scint ECAL 2008
- gas HCAL 2009
- analysis 2010



PFLOW and test beam

- Thanks to low occupancy, can use "event mixing" techniques
- Measure the confusion term - in data and MC





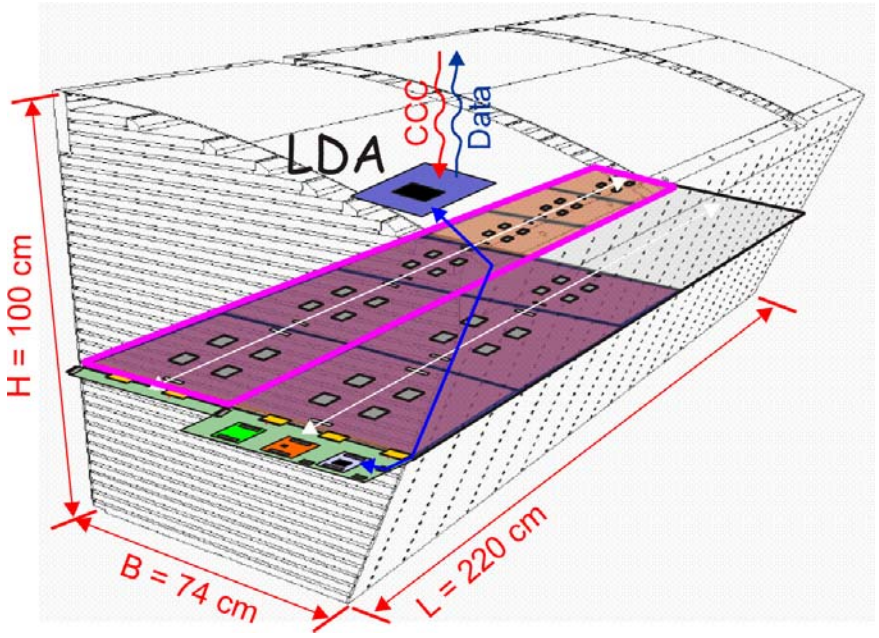
Towards benchmarking the PFLOW performance

Collaborative structure

- CALICE physics results for the whole ILC (and HEP) community
  - distributions, comparisons to shower MC
- CALICE event-by-event data for collaboration members only
  - airness to groups committed to task sharing
  - involve full detector expertise in extraction of physics conclusions
- CALICE is open to anybody who commits himself to the collaborative spirit
  - rules for publicizing results
  - Sharing the common tasks
- CALICE foresees joint ventures with other groups for common beam tests of limited scope

Technical prototypes

- still find collaborative structure useful
- many common issues – common for different technolgies
  - ASIC design, DAQ, s/w
- integration issues (compact structures) largely concept-independent
- next round of prototyping (e.g. EUDET "module 0") by 2009
  - "demonstrator structures"



Interaction with concept groups

- Physics impact of detector performance
  - Benchmarking with fully digitized MC, from test beam experience
- PFLOW algorithms and performance observables

- Optimization of internal parameters
  - granularity: nicely done
  - sampling structure: next: scintillator vs absorber thickness
  - Mechanical design importance of cracks, dead material

- Detector integration boundary conditions
  - make realistic assumptions
    - avialble space, support structure, services
- Calibration methods, band width considerations
  - using physics and background events

Conclusion

Concept groups and R&D collaborations:

- Present task sharing model works well
- Keep it – as long as options open on both sides
- Avoids duplications and maximizes efficiency