Introduction

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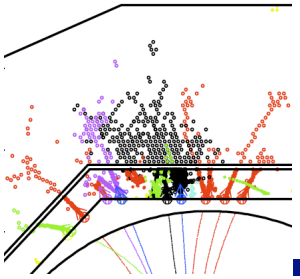
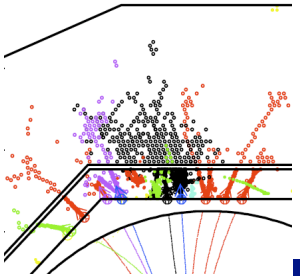
CALICE eDAQ & AHCAL meeting
DESY, December 12-13, 2011



Outline

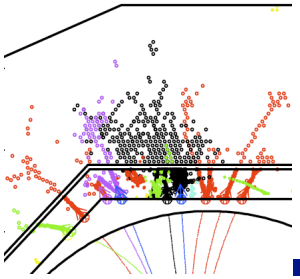
- Towards the ILC DBD
- Schedule
- Contents, open issues
- Prototyping 2011 and beyond



Timeline

- DBD as part of ILC TDR due end 2012
  - 3 parts; physics, ILD, SiD
  - demonstrate that the detector can be built and do the physics
- First draft at ALCPG meeting in Arlington, October
- last updates CALICE meeting in Cambridge September

- ILD definition of baseline technolg**ies** end May
  - SiD similar timeline for DBD input
- CALICE assessment of technology status
  - external review beg of May (still some ?)
  - common CALICE document beg April (no ? !)
- CALICE meeting in Shinshu, beg March
  - make our case!

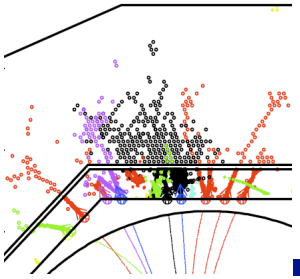


Towards detector baseline docs

- Spring 2012: CALICE assessment of technology readiness

- **Established performance:** energy resolution, linearity, uniformity, two particle separation
- **Validated simulation:** longitudinal and transverse shower profiles, response, linearity and resolution, for electrons and hadrons
- **Operational experience:** dead channels, noise, stability, monitoring and calibration
- **Scalable technology solutions:** power and heat reduction, low volume interfaces, data reduction, mechanical structures, dead spaces, services and supplies
- **Open R&D issues:** analysis and R&D to be completed before a first pre/production prototype can be built, cost reduction and industrialization issues

- Expect an external review (PRC or ECFA) in ~ April
- Technology baselines: ILD before mid 2012, SiD similar
- Latest test beam results for DBD: fall



Priority items

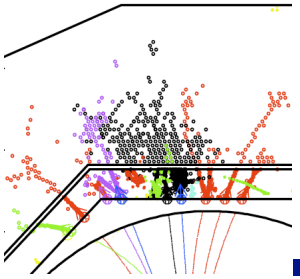
- Performance
  - e.g. HCAL (and combined) resolution vs MC
  - uniformity
- Understanding
  - muon response and simukation

publish!

- Physics validation
  - track segments, profiles vs Geant 4, tungsten
- Technology and integration
  - System test at layer level
  - timing proof of principe
  - system test at stack level

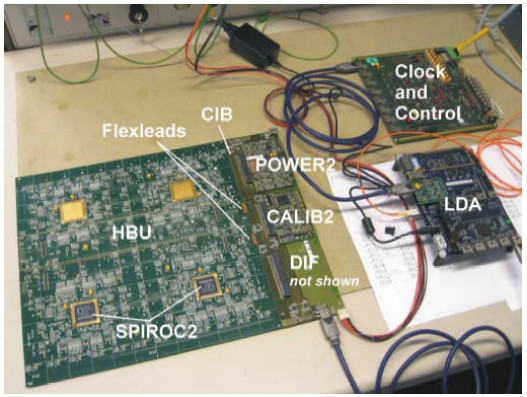
next prototypes

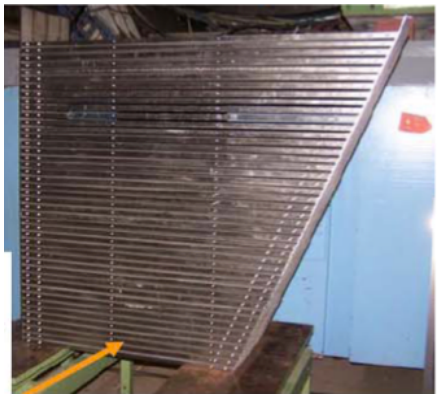
- R&D plan
  - scintillator SiPM alternatives, direct coupling, industrialization

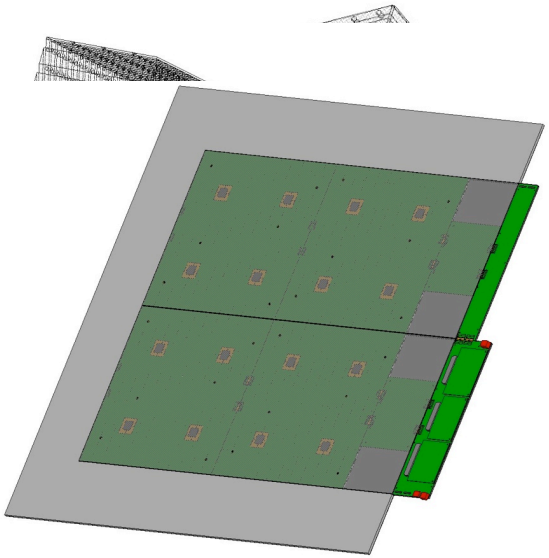


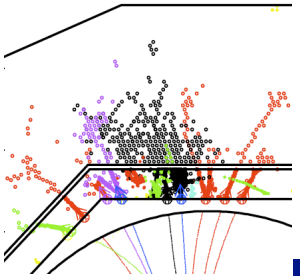
Scintillator HCAL plans

- electronics is in hand
- 1-2000 tiles with SiPMs on the way at ITEP
- different existing absorber structures open different options
  - EUDET stainless steel
    - horizontal, vertical
  - AIDA tungsten: time-resolved shower imag
- PCBs and SiPMs needed for a full 4D prototype:
  - 22000 ch for 40 layers









Conclusions

- Round up the picture in 2012:

- Physics publications
- First 2nd generation demonstrator
- R&D plan

- Prepare for the future beyond 2012

- DAQ for stacks
- mass production and industrialization

- Things may start to move!