

# Introductory remarks



Collaboration Meeting  
Lyon, France, September 16-18, 2009



Felix Sefkow



# Merci !

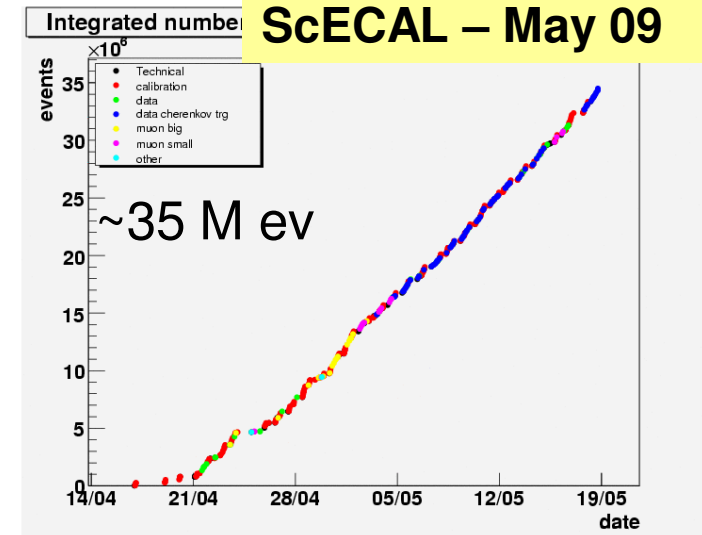
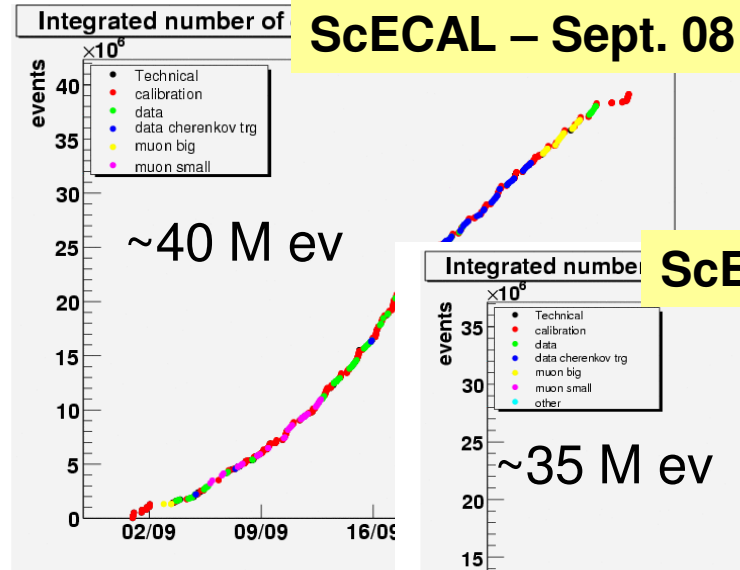
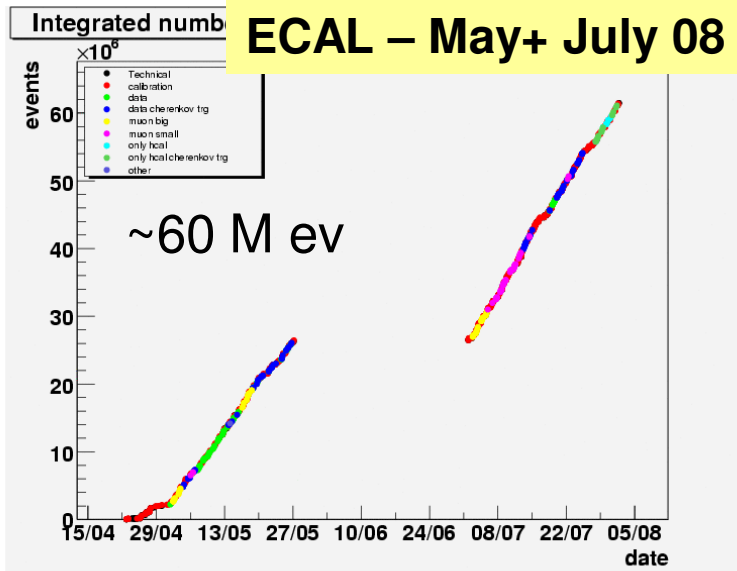
- To our host,  
Institut de Physique Nucleaire, Lyon
- And especially to  
Muriel Vander Donckt and Imad Laktineh
- For their nice arrangements and the accueil  
chaleureux



## Some remarks on...

- Test beam
- Analysis and publication
- Collaboration issues
- Upcoming events

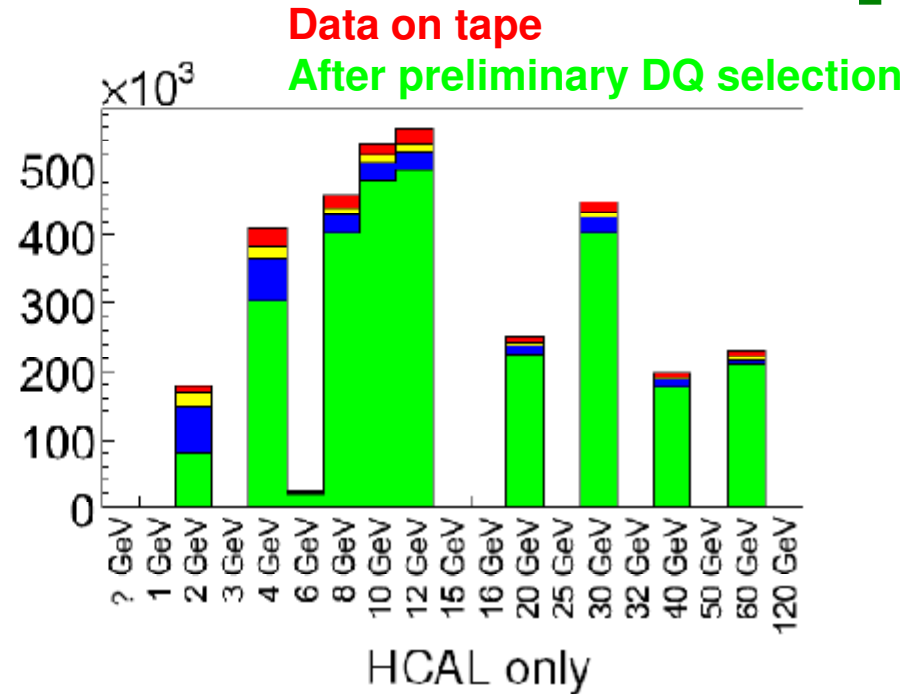
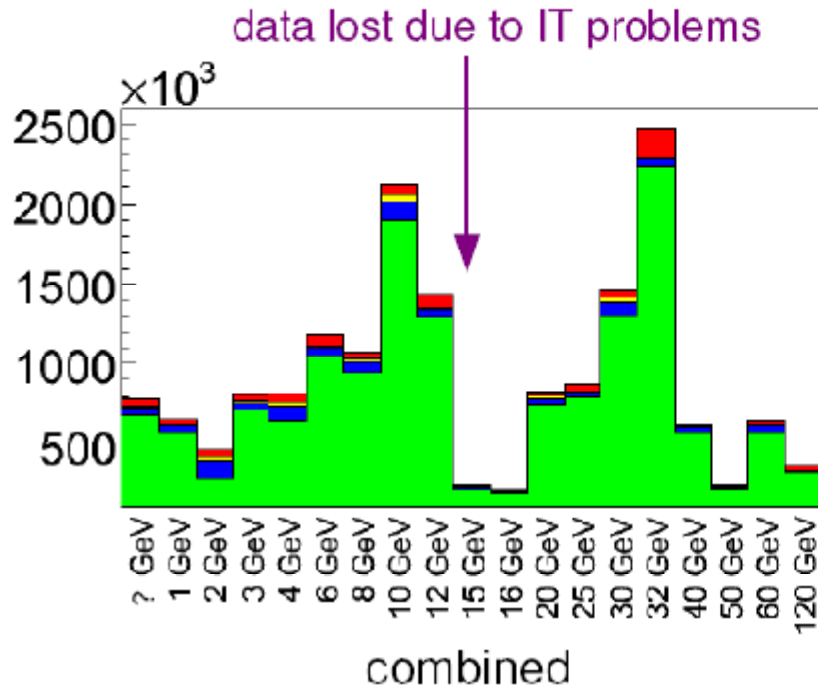
# Fermilab data taking



Smooth data taking after initial commissioning phase

~60 M events collected with Si-W ECAL + AHCAL (same as at CERN 07)

~75 M events with Sc-W ECAL + AHCAL (first time tested)



Plots include **ONLY** pion runs from FNAL 08 both with ECAL and ScECAL

➔ Good coverage of all energy range 1-60 GeV

➔ Good performance of our detectors:

less than 10% events rejected by Data Quality

# Thanks!

- To our run coordinators Satoru Uozumi and Nils Feege !



*And to FNAL for hospitality  
And to Erik Ramberg for support*

# More test beam

- DHCAL delayed due to tight funding and manpower situation
  - Test beam is idle since 4 months and will remain so for many more
  - Hope to start in first half of 2010
- Successful beam campaigns at CERN PS and SPS for GRPC and Micromegas DHCAL test set-ups
- Status and outlook for up-coming 2<sup>nd</sup> generation proto-types:
- → see overview report from the Technical Board by Roman

- Widespread effort - see agenda: many institutes active
  - Could be even more!
- Detector understanding has matured, results on calibration and resolution published or being finalized
- Results on hadron shower global properties
- Interaction with Geant4 developers intensified
- Still lots of things to be accomplished
  - Hadrons in the ECAL,  $e/\pi$  separation
  - Fermilab electron and low energy hadron data only started
  - Position and angular resolution for hadrons in (ECAL+) HCAL
  - PFLOW validation, substructure



- Papers in 2009
  - SiW ECAL response (submitted 2008)
  - DHCAL slice test (2 papers)
- In the editorial board:
  - AHCAL detector paper (2<sup>nd</sup> draft)
  - ECAL irradiation (1<sup>st</sup> draft)
  - ECAL e shower shapes (no draft yet)
- Analysis notes in 2009
  - AHCAL transverse profiles
  - ECAL+HCAL resolution, weighting
- In the editorial board
  - AHCAL calibration (2<sup>nd</sup> draft)
  - AHCAL transverse profiles update (1<sup>st</sup> draft)
  - AHCAL long profiles 2007 update (1<sup>st</sup> draft)

*Some progress...*

*Must convert these into papers*

*And there are notes from 2007 and 2008*

- Analyses take much longer than anticipated
  - Technical issues - geometry, alignment, tracking - proved tricky
  - Still many software "construction sites" and much clean-up work
  - Need more support and better spreading of knowledge
- DHCAL software a challenge of novel kind
  - Integration not as straightforward as with the previous detectors all based on the same electronics architecture
  - Diversity within (s)DHCAL effort
  - Need to enhance "cross-talk"
- LCIO remains our back-bone
  - serves ILD, SiD and CLIC communities
  - open to needs of "running experiments"
  - Future directions of core software
    - Evaluate root I/O
    - Common modular PFA
    - Aim at higher inter-operability (not easy, though)

- Mechanics
  - Prototype development and integration
  - Common R&D topics, precision and production issues, cost
  - Not: the detector concept work (optimization and overall integration)
- High energy
  - The leakage dominated regime
  - Performance goals
  - Sampling optimization and test beam prototyping with tungsten

# New collaborators

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- CERN
  - Tungsten HCAL, Geant 4 validation
- University of Tsukuba
  - Scintillator ECAL electronics integration , simulation, analysis
- University of Gent
  - RPC DHCAL

## 5. EVALUATION OF THE THREE CONCEPTS

### 5.1 ILD

The ILD Collaboration has presented a LOI which documents the impressive quantity and quality of work performed. A particular strength of the LOI is the very extensive R&D effort made in test beams with full-size prototypes of the calorimeter having been constructed and operated at DESY, CERN and Fermilab. Indeed, alternative technologies for the calorimetry are also being explored in the test beam program. Integrated with these calorimeter tests their data have been taken with a “tail catcher” for one of the possible muon system options. This large data set will allow ILD to validate the PF strategy which is central to their design. The

- Calorimeter test beam is highly appreciated
- And will also be the key in the future

# Concepts and us

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- The concepts are asked to formulate prioritized R&D plans <2012
- We are of course closely involved in the process
- However:
- We must visibly show that we are aligned
- We must defend the diversity of our efforts and demonstrate synergies
  - Keep options
  - Maintain R&D targeted beyond 2012, e.g. MAPS DECAL
- 4<sup>th</sup> is not validated, but Dual Readout R&D endorsed

- September 28 - October 3: ALCPG at Albuquerque, NM
  - 14 CALICE talks
    - o Energy resolution and shower weighting (Katja Seidel)
    - o Analogue HCAL analysis overview (Angela Lucaci-Timoce)
    - o Analogue HCAL calibration (Angela Lucaci-Timoce)
    - o Analogue HCAL hardware plans (Felix Sefkow)
    - o Semi-digital HCAL tests and plans (Manqi Ruan)
    - o Si\_W ECAL results and plans (Roman Poeschl)
    - o Development of large area MICROMEGAS chambers for DHCAL (Jan Blaha)
    - o Analysis of the RPC DHCAL data (Qingmin Zhang)
    - o Construction of the RPC DHCAL physics prototype (Lei Xia)
    - o Simulation of an RPC DHCAL (Jose Repond or Jacob Smith)
    - o TCMT studies (Kurt Francis - still uncertain)
    - o The Scintillator ECAL Beam Test at FNAL (Katsushiga Kotera)
    - o LED calibration system for the CALICE AHCAL (Ivo Polak)
    - o Comparison between Fe and W HCal at multi-TeV energies (Christian Grefe)
    - o GEMs for DHCAL (Jae Yu)
- October 12-16: CLIC09
  - Presentations on CALICE test beam results and particle flow

## And on:

- October 19-21: EUDET Annual Meeting at Geneva U and CERN
  - Discuss also plans for new EU FP7 proposal AIDA
- November 3-5: Linear Collider test beam workshop at LAL, Orsay
  - Meet tracking and vertexing communities and facility representatives
  - Formulate needs for next round of test beam experiments



- November 5-6: CALICE review at DESY PRC
  - Need help and support



Best wishes  
for an enjoyable meeting  
and lively discussions!