

Welcome to the 30. FCAL WS

March 2017

CERN, Geneva

Wolfgang Lohmann, BTU, DESY and RWTH

# New LCC management

LCC Director: Lynn Evans

Deputy and Science Advisor: Hitoshi Murayama

Associate Director for the ILC: Shinichiro Michizono  
(was Mike Harrison)

Associate Director for Physics and Detectors: Jim Brau  
(was Hitoshi Yamamoto)

Associate Director for CLIC: Steinar Stapnes

Appointed by ICFA for 3 years (with the hope that a major decision before may made this structure obsolete)

# Mission of FCAL

## Luminosity Measurement, Beam Tuning, Physics

- The luminosity is a key parameter of an  $e^+e^-$  linear collider
  - High Luminosity ensures access to rare processes (e.g. triple Higgs boson coupling)
  - Precise luminosity measurement is a prerequisite for precision tests (e.g. Standard Model on the quantum level)

Development of detectors for bunch-by-bunch luminosity measurement and fast feed-back to the machine

- BeamCal and Pair Monitor (exploiting BeamStrahlung)

Development of Detectors to measure precisely the luminosity

- LumiCal and very forward tracker

Exploit these Detectors for physics

- Susy searches, two photon physics

# Technological Challenges

for a highly compact calorimeter

- novel connectivity technology (e.g. bump bonding, thin fan-out PCB)

Construction of a demonstrator calorimeter

- completion of the mechanical structure (+laser alignment)
- production of sufficient ASICs in 130 nm technology

Goals:

- demonstration of power pulsing
- operation of a data concentrator and fast data transfer
- Energy resolution (luminosity spectrum)
- spatial resolution (angular spectrum)
- bias in the angular measurements (systematic shift to be quantified)

# FCAL Structure in work

Governing body is the institute board, chair Aharon Levy

Spokesperson and deputy, me and Marek Idzik

Technical Coordinator, Yan Benhammu

Speakers and Publications committee, chair Strahinja Lukic

Regular bi-weekly “software and analysis” and hardware meetings (thanks to Olexandr Borysov and Marek Idzik)

# FCAL Laboratories

Currently 13 Institutes with authors,  
63 authors listed

<sup>a</sup>*Tel Aviv University, Tel Aviv, Israel*

<sup>b</sup>*Pontificia Universidad Catolica de Chile, Santiago, Chile*

<sup>c</sup>*NC PHEP, Belarusian State University, Minsk, Belarus*

<sup>d</sup>*DESY, Zeuthen, Germany*

<sup>e</sup>*Vinca Institute of Nuclear Sciences, University of Belgrade, Serbia*

<sup>f</sup>*JINR, Dubna, Russia*

<sup>g</sup>*IFIN-HH, Bucharest, Romania*

<sup>h</sup>*IFJ PAN, PL-31342, Krakow, Poland*

<sup>i</sup>*CERN, Geneva, Switzerland*

<sup>j</sup>*Faculty of Physics and Applied Computer Science, AGH University of Science and Technology,  
Krakow, Poland*

<sup>k</sup>*ISS, Bucharest, Romania*

<sup>l</sup>*Tohoku University, Sendai, Japan*

<sup>m</sup>*Aarhus University, Aarhus, Denmark*

<sup>n</sup>*University of California, Santa Cruz, USA*

# Some critical issues to be discussed

- AIDA milestone „data concentrator“ (April 2017) results of the discussion summarised by Marek
- Impact of new  $L^*$  and magnet (anti-DID) at ILC on backscattered particle intensity
- Calibration and alignment concept (Monte Carlo, good for master students)
- Validation of the Monte Carlo for „mass production“
- Concept for a new sensor plane for the prototype

# RANDALF 3

- A new attempt will be made to get support from European Community for detector R&D
- Currently Europe-Japan Accelerator Development Exchange Programme E-J
- ADE was opened for Detector R&D
- Since end of 2017/beginning 2018 a statement from the Japanese MEXT committee about the ILC is expected, the application RANDALF III is postponed to 2018



# Forthcoming events

- EPS Conference on High Energy Physics, 5-12 July, Venice, Italy  
Relevant sessions: Detector R&D and Data Handling  
Abstract deadline: 15 April  
<https://indico.cern.ch/event/466934/>
- PANIC 2017, 1-5 september 2017, Beijing, China  
Relevant sessions: Development of accelerators and detectors  
Abstract deadline: 30 April  
<http://indico.ihep.ac.cn/event/6329/>

# Forthcoming events

- 2017 IEEE NSS-MIC, 21-28 October, Atlanta, Georgia  
Relevant sessions: High Energy Physics instrumentation,  
Radiation Damage  
Effects and Radiation Hardened Devices  
Abstract deadline: 8 May 2017  
<http://www.nss-mic.org/2017/>
- Next FCAL workshop ?
- Linear Collider workshops