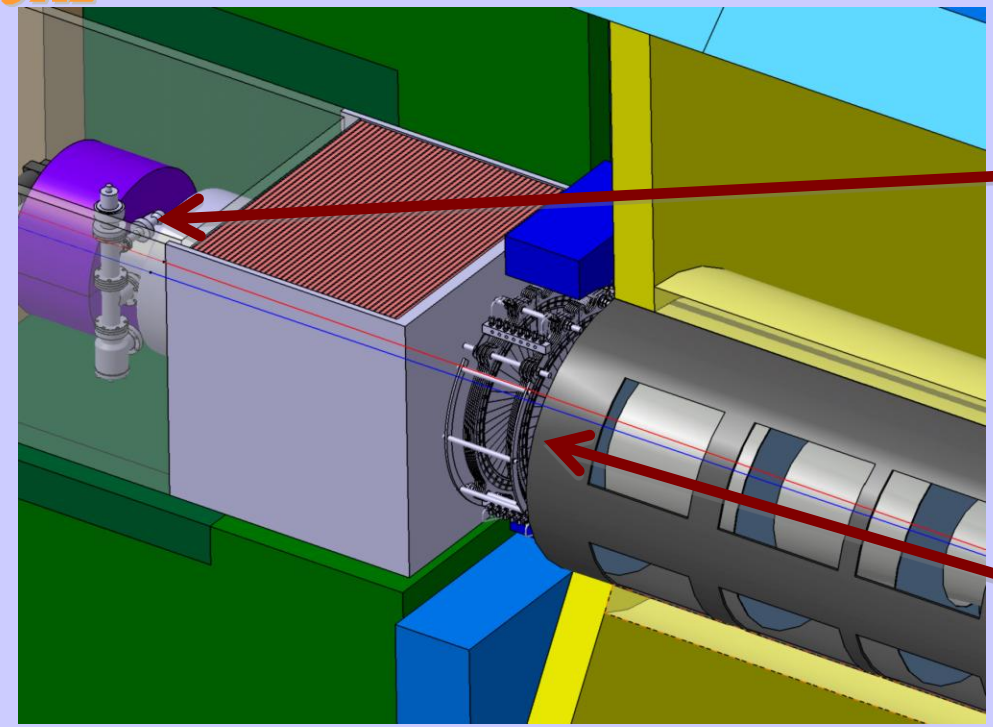
FCAL & Polarisation-Conclusions

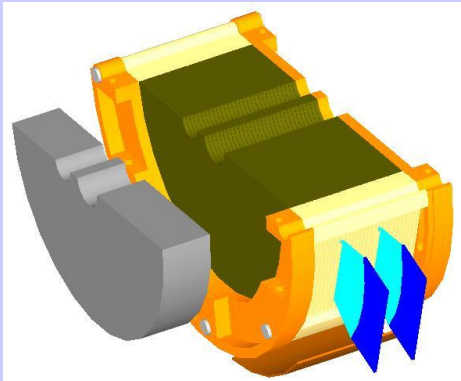
Wolfgang Lohmann, BTU and DESY

Labs involved: Argonne, Vinca Inst, Belgrade, Bukharest IFIN, CERN, Univ. of Colorado, Cracow UST, Cracow INP, JINR Dubna, Royal Holloway, NCPHEP Minsk, Santa Cruz, Stanford University, SLAC Tuhoku Univ., Tel Aviv , Univ., DESY (Z.)

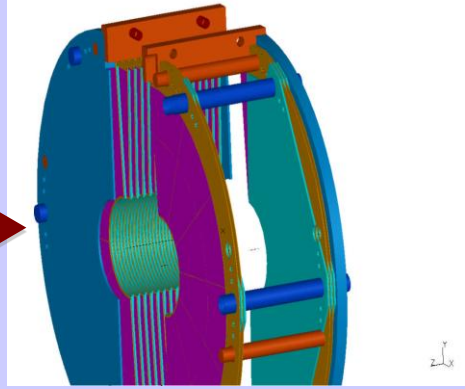
Very Forward Instrumentation- Example ILD



BeamCal + Pair Monitor



LumiCal



- Ongoing simulations to optimize detector design for
  - precise luminosity measurement,
  - hermeticity (electron detection at low polar angles),
  - assisting beam tuning (fast feedback of BeamCal data to machine)
- Challenges: radiation hardness (BeamCal), high precision (LumiCal) and fast readout (both)

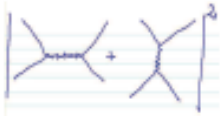
Similar or harder challenges are expexted at CLIC

Our effort so far – Develop Technological Solutions to tackle the Challenges

Vital Theory Scene

Talks by Tord Riemann and Janusz Gluza

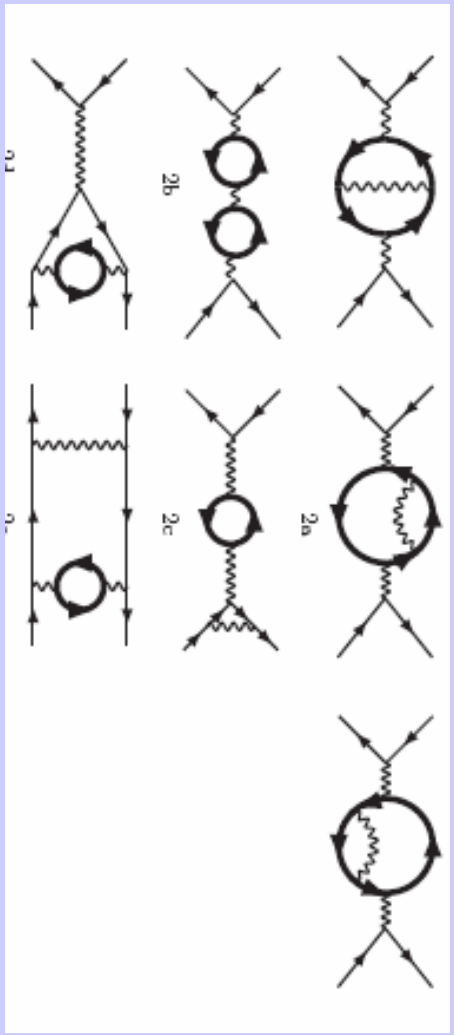
http://en.wikipedia.org/wiki/Homi_J._Bhabha
http://de.wikipedia.org/wiki/Homi_Jehangir_Bhabha



H. Bhabha
"The Scattering of Positrons by Electrons with Exchange on Dirac's Theory of the Positron"
[1] Proc. Roy. Soc. A154 (1936) 195

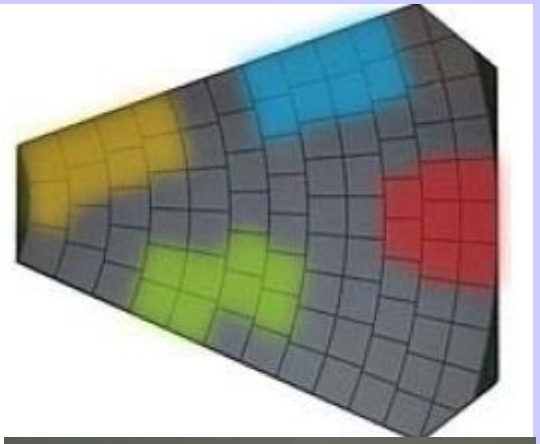
- Thank you for spelling out the need of NNLO results !
- Much non-trivial progress reached in last 10 years
- Did not yet find the way into the MC-programs
- A bit new stuff is to do yet
- Understanding details and combining them will take another effort

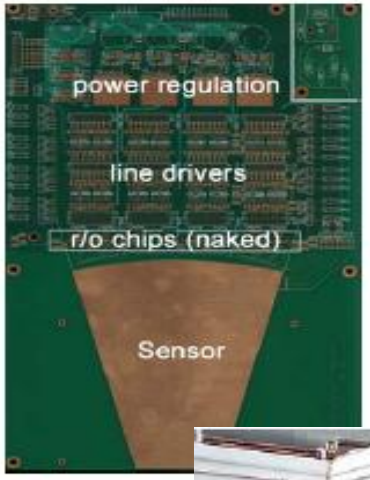
"You know, we're just not reaching that guy."

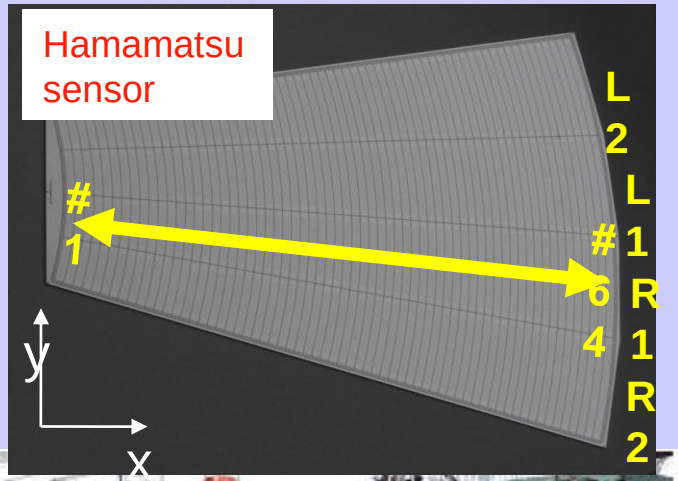


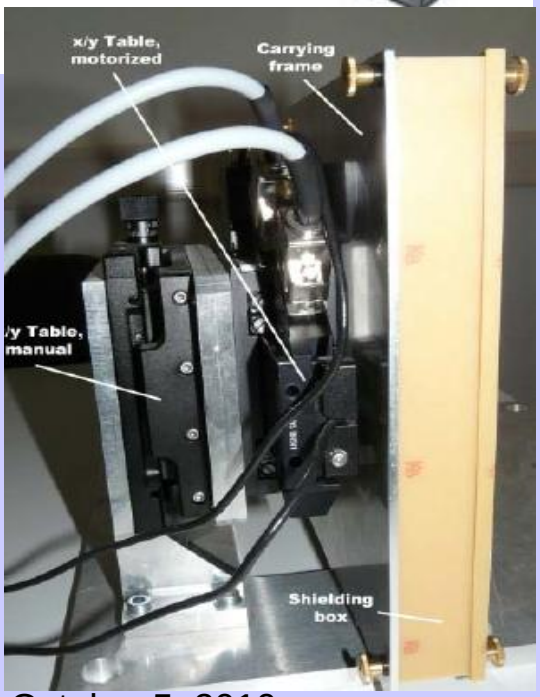
Succesfull test-beam venture in August

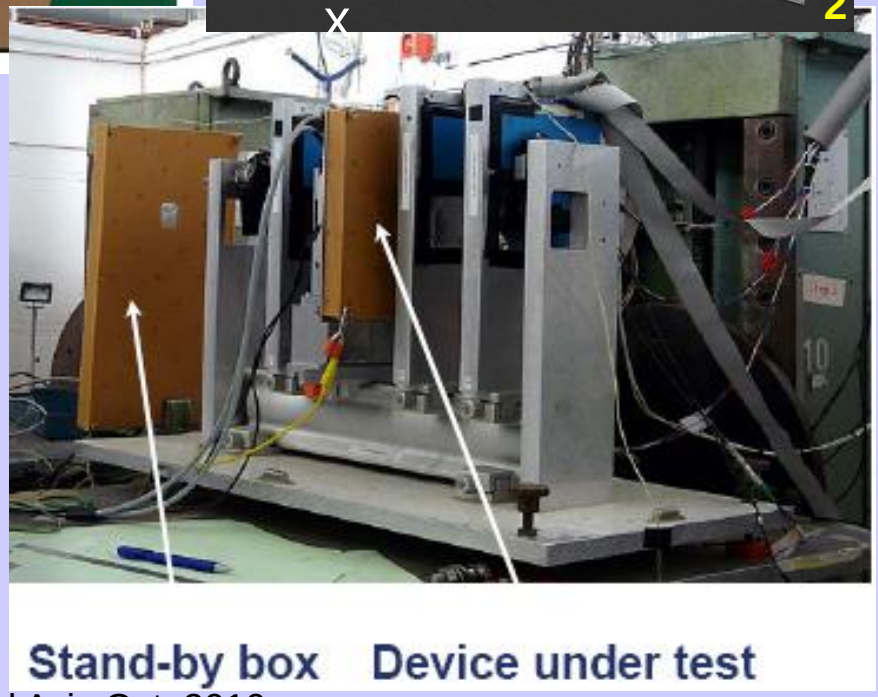
Talks by H. Henschel, S. Kollowa, I. Levy





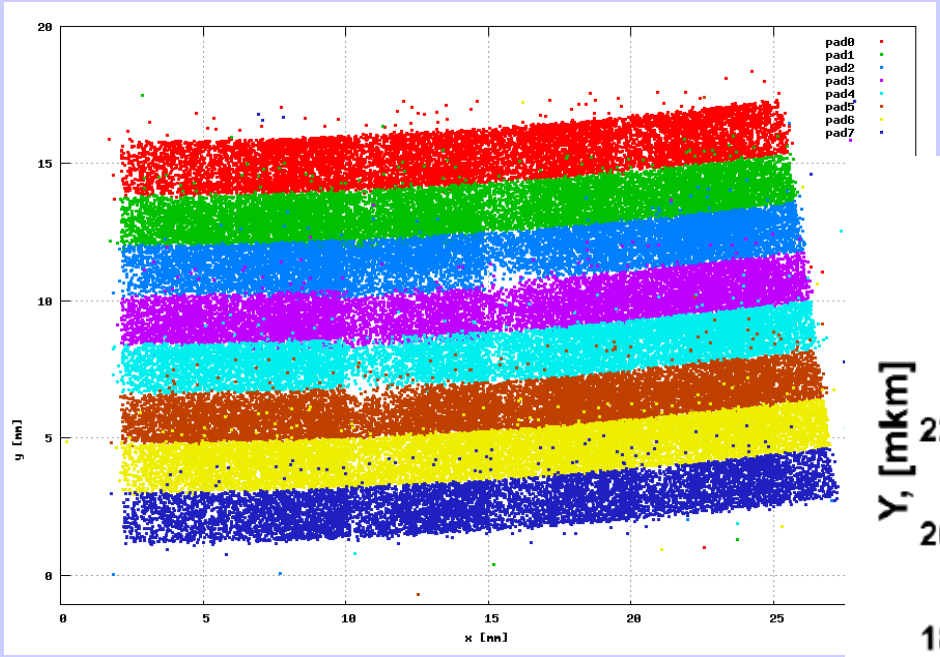


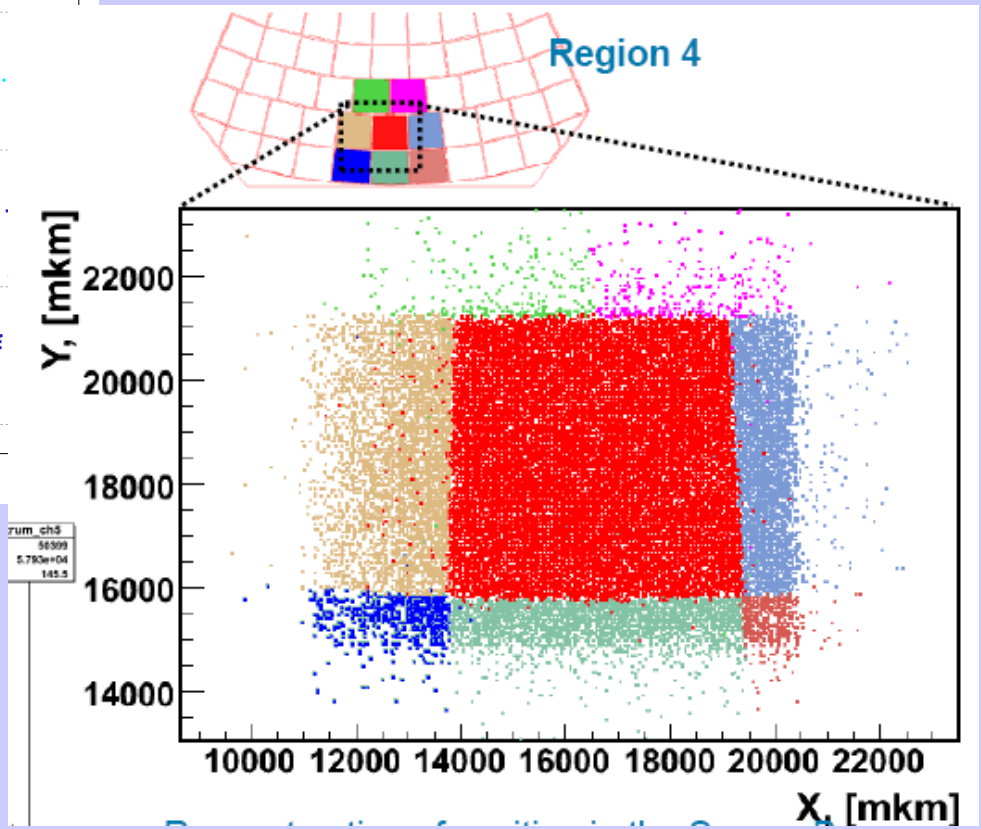




Successfull test-beam venture in August

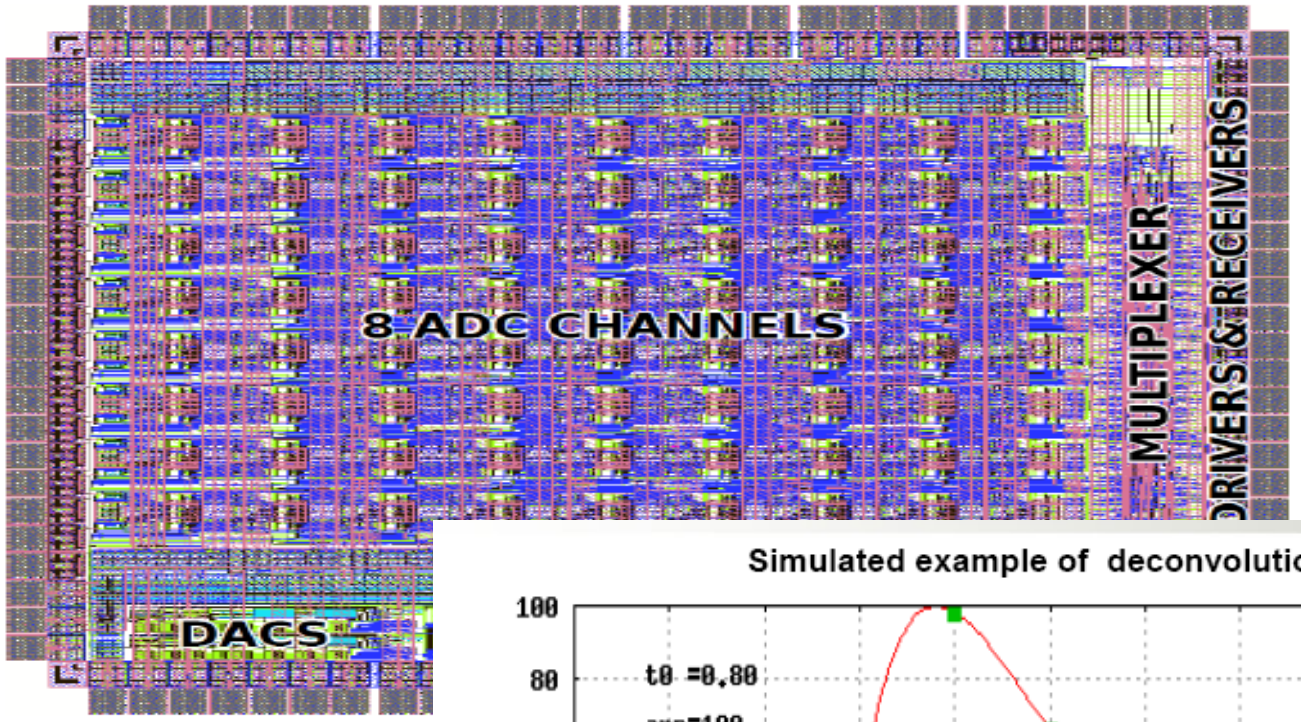
Preliminary results presented by O. Novgorodova, J. Aguilar

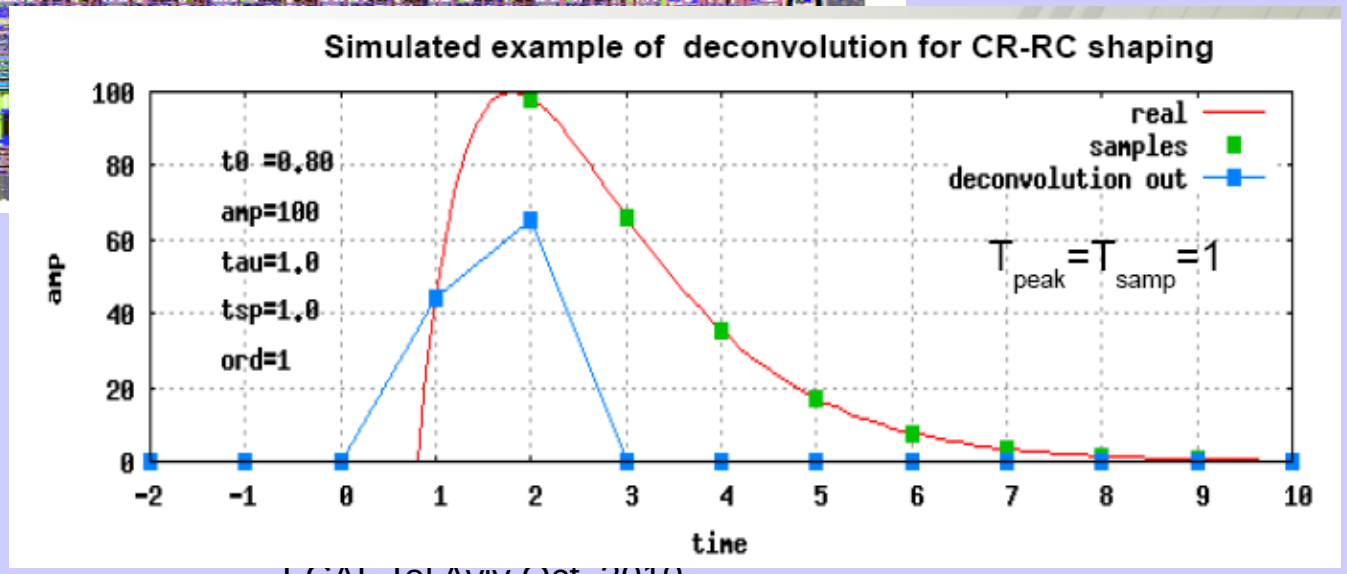




ASIC News

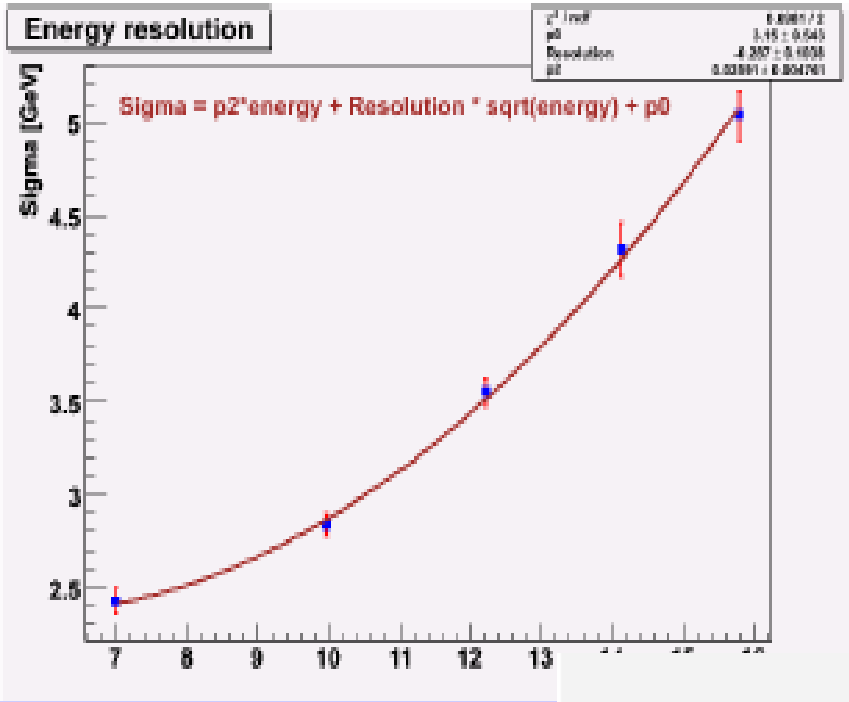
Preliminary results presented by Th. Fiutowski, S. Kulis

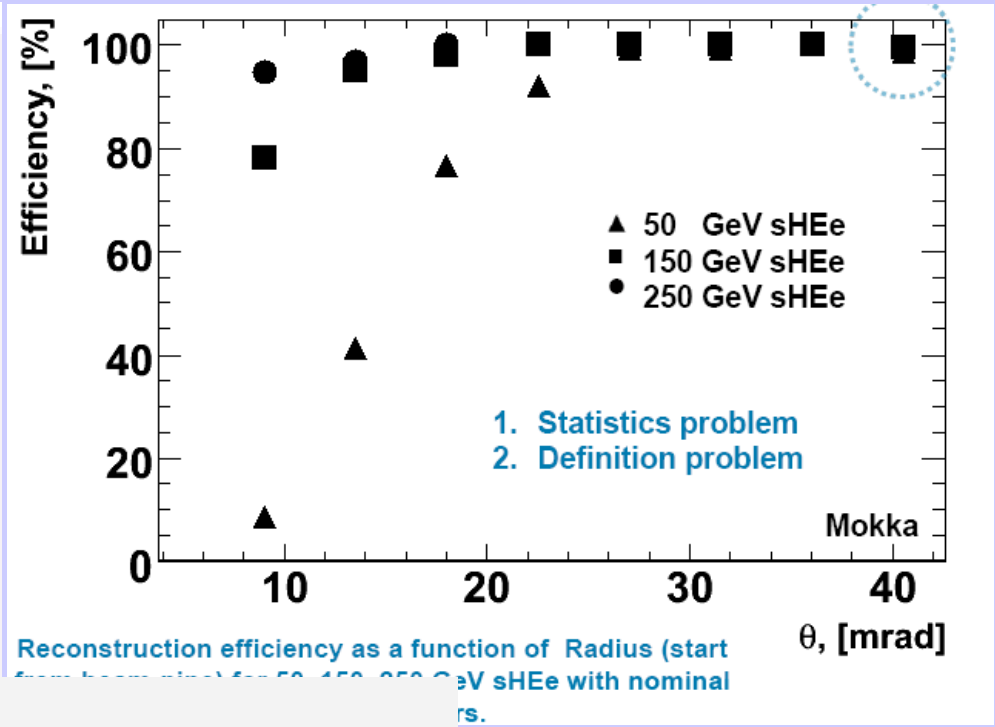




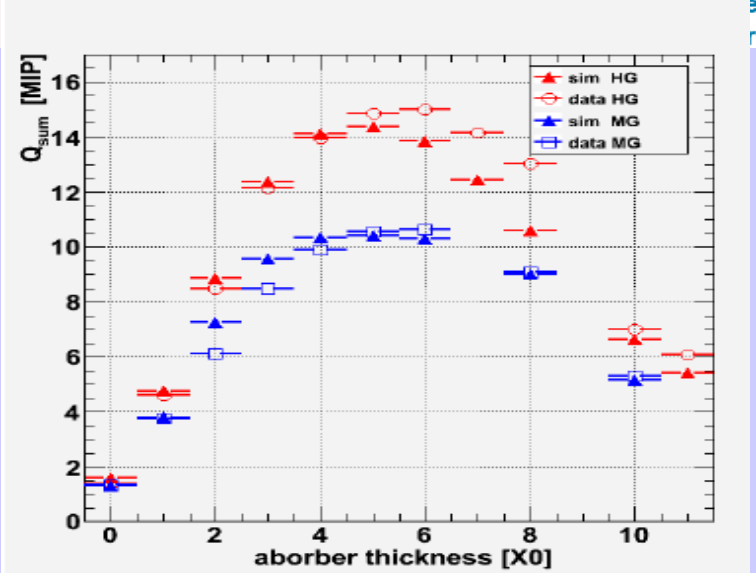
Simulations

results presented by O. Novgorodova, M. Stanescu, B. Pawlik



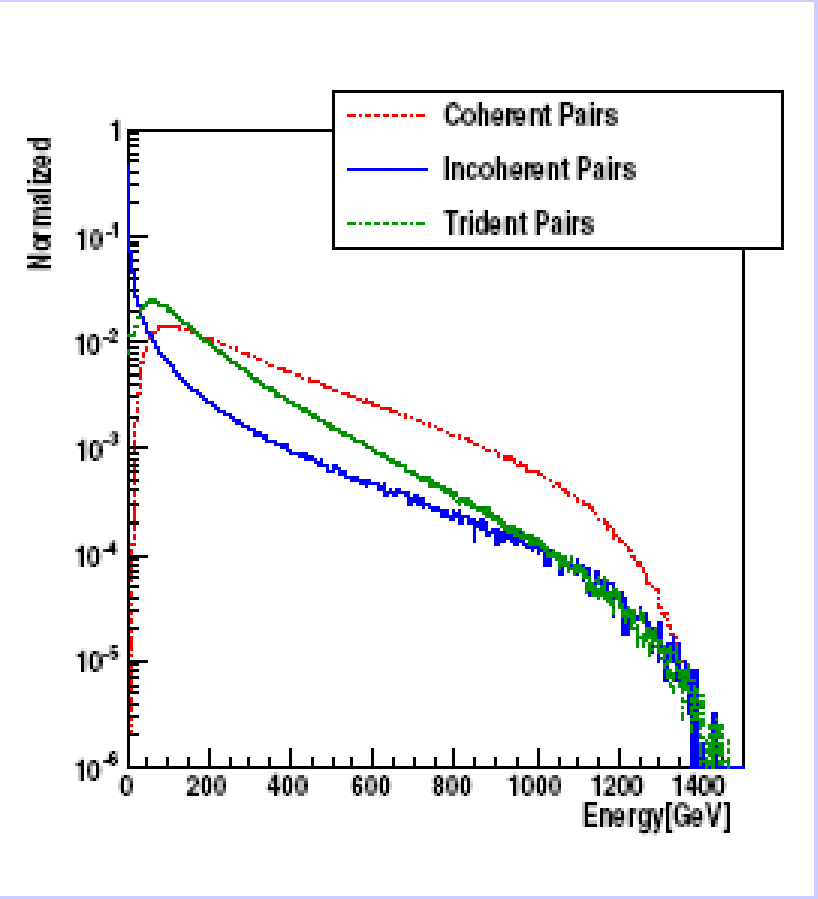


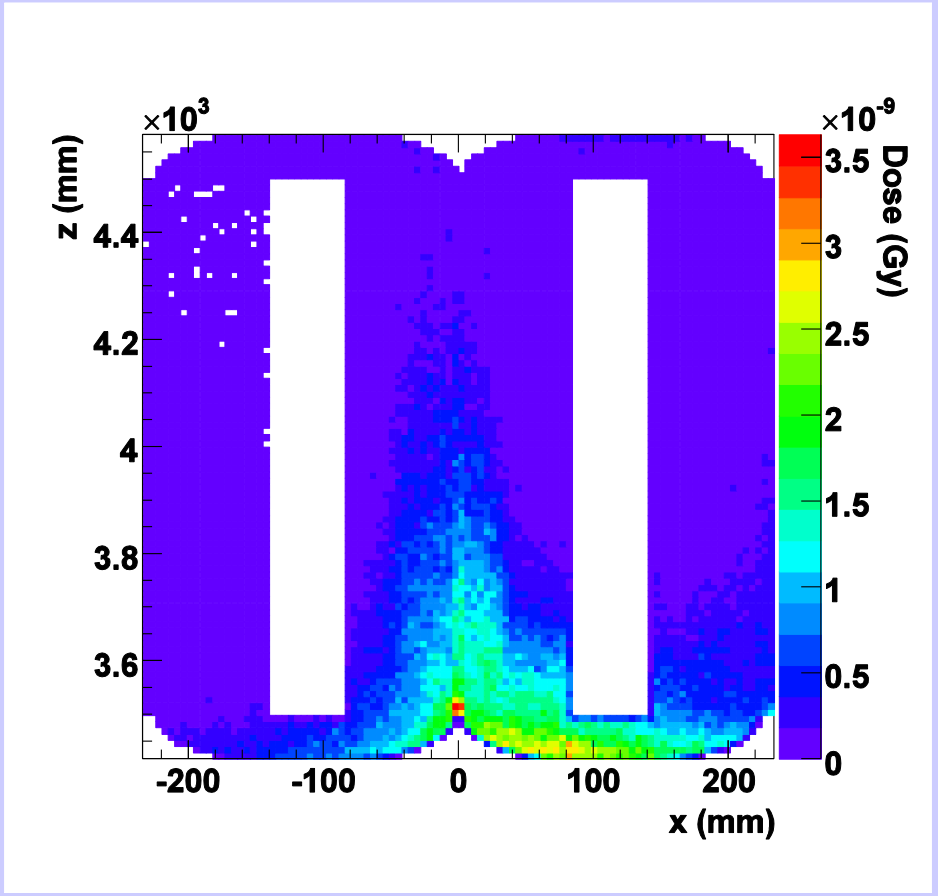
Reconstruction efficiency as a function of Radius (start from beam pipe) for 50, 150, 250 GeV sHEe with nominal ...rs.



Simulations

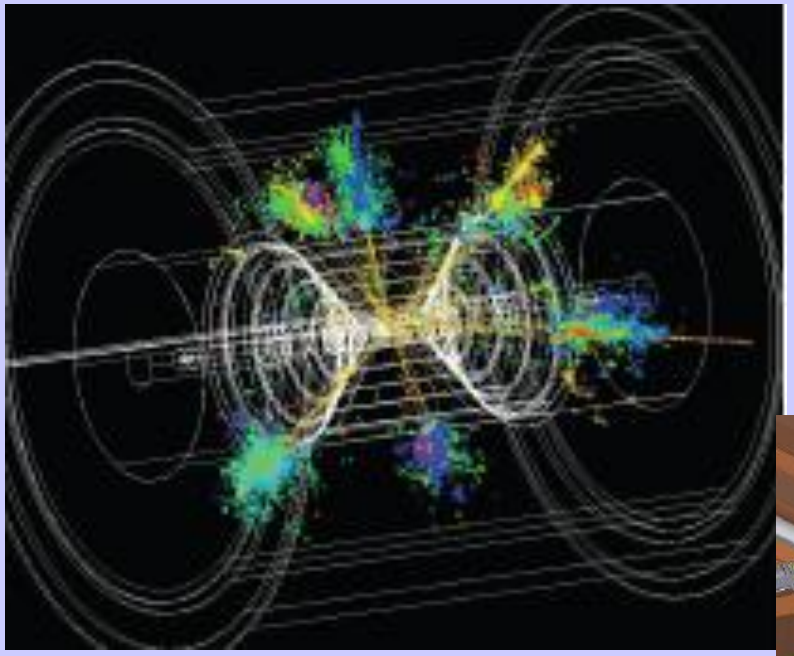
Results for CLIC detector design by A. Sailer, E. Teodurescu

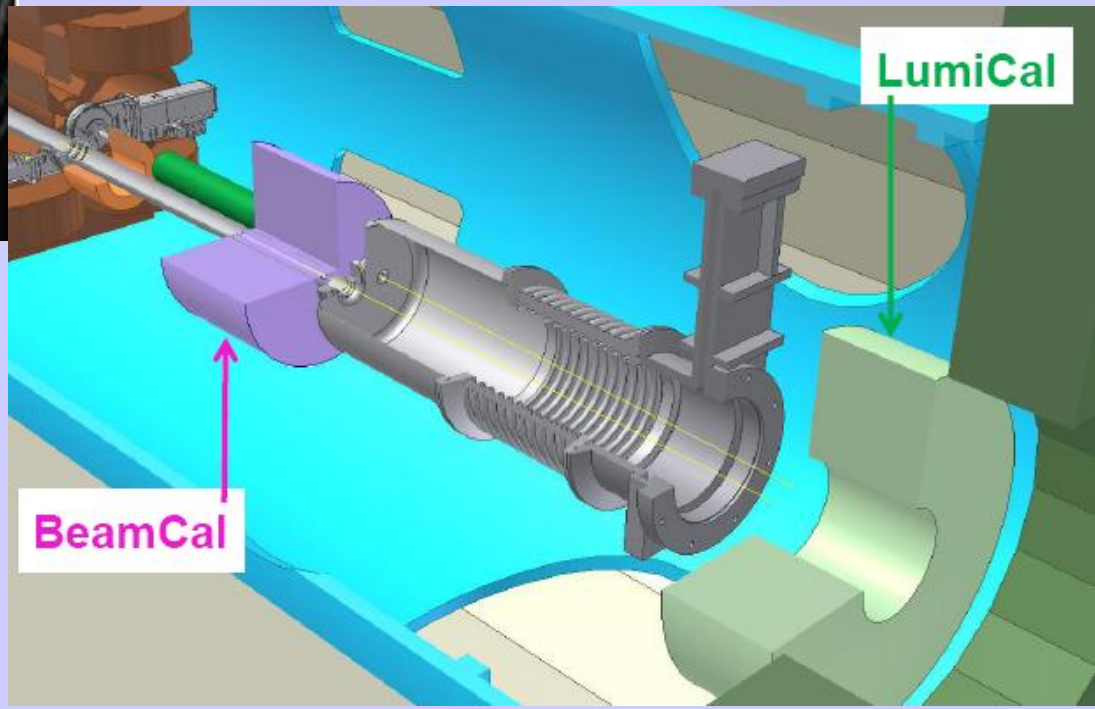




CLIC Detector Plans

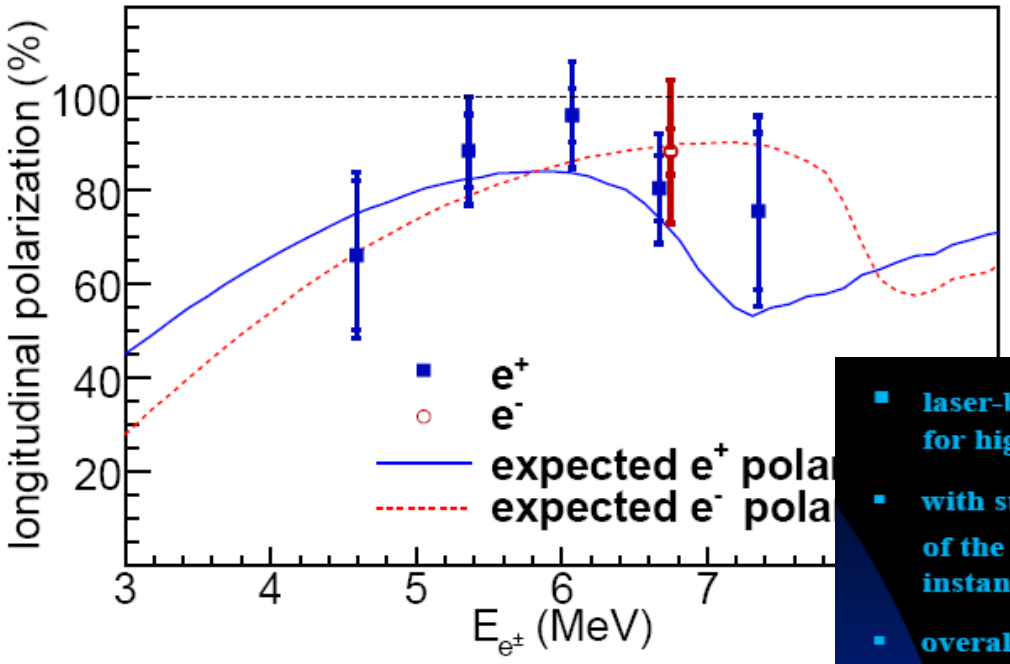
L. Linssen, K. Elsener





Polarisation

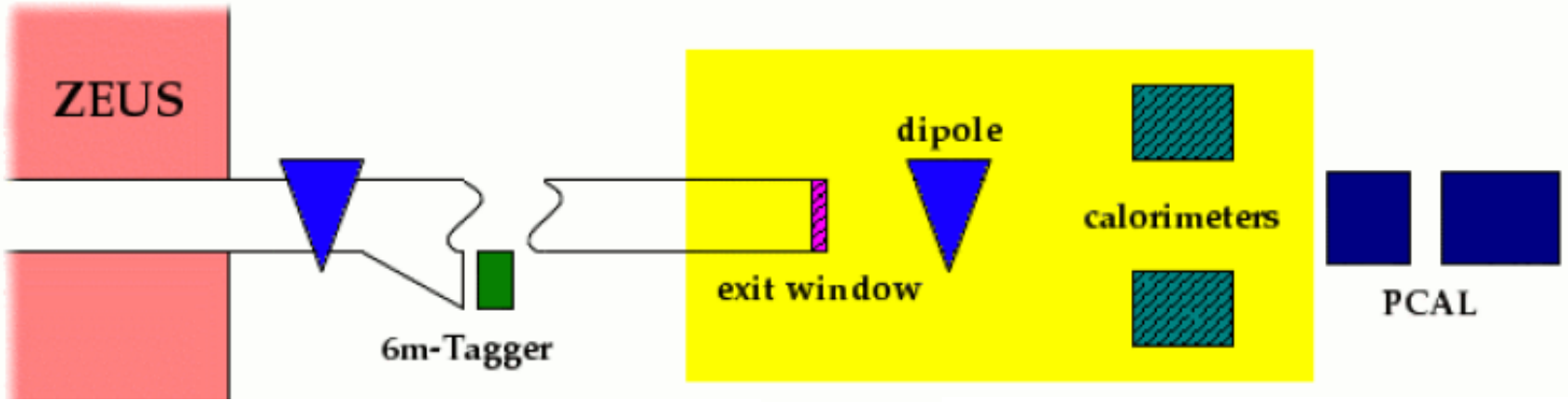
S. Riemann, P. Schuler, A. Michalishenko

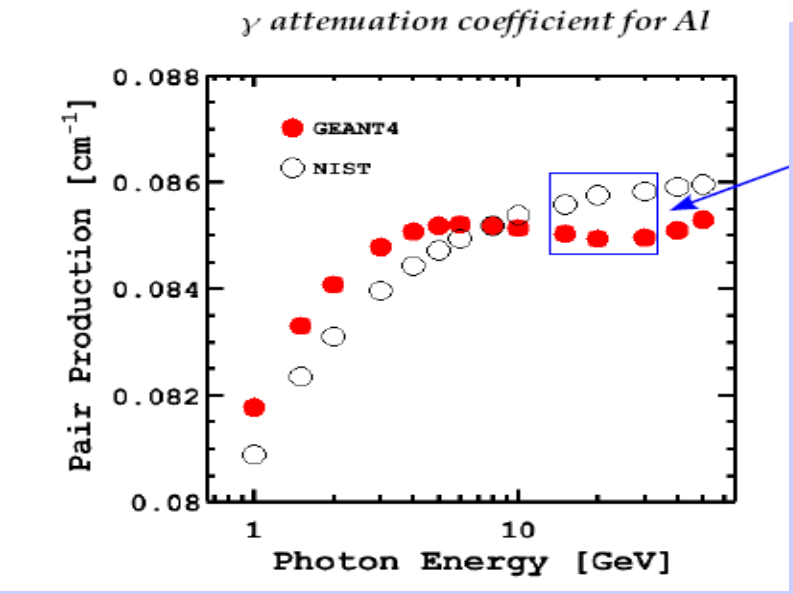


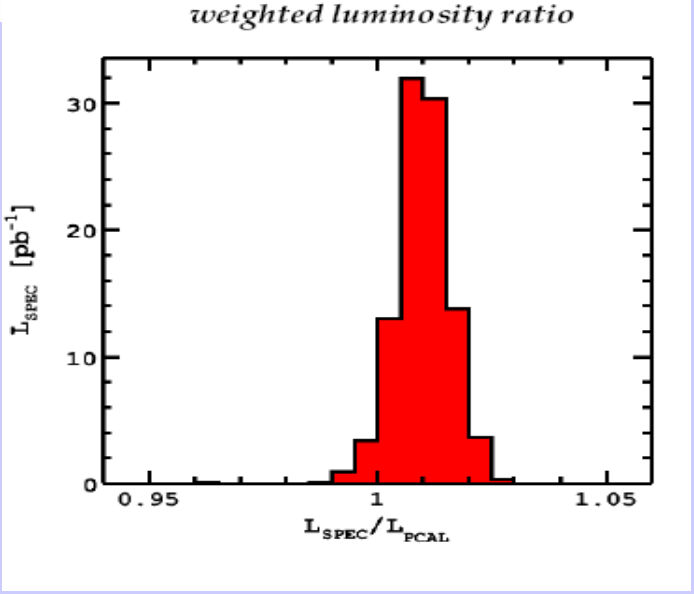
- laser-based Compton scattering provides a powerful tool for high-energy electron and positron beam polarimetry
- with suitable lasers matched to the bunch and pulse pattern of the machine, measurements will be very fast, allowing instant feedback for spin control elements in the machine
- overall errors for ILC will be limited by systematics to the level of ~ 0.2% which is comparable to the degree of depolarization of the incoming beams from beam-beam interaction up to the lumi-weighted interaction point
- comparison of upstream polarimetry with downstream polarimetry (not covered here) and physics-based polarization analysis will check the control of systematics
- detailed studies have been carried out for TESLA and for ILC, based on a dedicated TTF-style laser
- a feasibility study has also been carried out for CLIC, assuming a standard Q-switched YAG laser

Lumi Measurement in a real Experiment

V. Drugakov







One of the most interesting FCAL meetings

Thank you, Halina, Aharon, Gideon

Rina, Ronen, Itamar, Iftach, Amir……

I am sure we will come back!