



Discussions: Planning 2018

Ties Behnke



Issues



- Technical group: see Claude's discussion yesterday in the parallel session
 - Interface document
 - Understanding services
 - Anti-DID?
 - Coil/ Yoke thickness?
- Working group on HCAL geometry?

Issues



- Software: Frank's and Akiyas discussions
 - We need stop improving things, and move on to production (quote by Frank)
 - For the most part, the system seems to be in place and working
 - We have both models available
 - We have the most important options available, for the calo in the form of hybrid simulations
 - Some reconstruction optimization still to be done
 - Forward tracking?
 - Flavour tag?
 - My personal bias: stick to the tested tracking at this point, even if conformal tracking promises to be better.

Issues



Benchmarking

- Status: see Jenny/ Keisuke
- List of benchmark reactions: list defined now by physics conveners
- Benchmarking: to be done at 500 GeV
- Proposal now on the table on approach how to “quantify” optimization

Physics analyses

- Should take stock of what we have (regardless of model)
- Collect ready analyses as much as possible.

A Reminder



Have converged on two geometric ILD models (ILD-S and ILD-L) as “boundaries” for the optimization

Both models now are available in simulation

ILD-S

- Same length as ILD-L
- Size similar to CLIC for maximum synergies
- Concept same as ILD-L

	ILD_L	ILD_S
Detektor	DBD (ILD-L)	Small ILD (ILD-S)
B-Field	3.5 T	4 T
VTX inner radius	1.6 cm	1.6 cm
TPC inner radius	33 cm	33 cm
TPC outer radius	180 cm	146 cm
TPC length (z/2)	235cm	235 cm
Inner ECAL radius	184 cm	150 cm
Outer ECAL radius	202.5 cm	168.5 cm
Inner HCAL radius	206 cm	172 cm
Outer HCAL radius	335 cm	301 cm
Coil inner radius	344 cm	310 cm

Optimize the ILD detector



Single particle Studies

Photons

Prompt Leptons: e , μ .

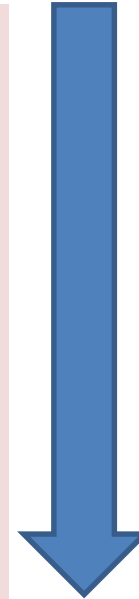
Tau - separated into topologies.

Hadronic charged particles: π^\pm , K^\pm , p , \bar{p}

Di-photons: π^0 etc.

V^0 's: K_S^0 , Λ^0 (including neutral decays)

Neutral hadrons: K_L^0 , n , \bar{n}



Increasing complexity
Increasing demands on samples

Do the optimization with a clear view on the physics we want to do!

Optimize the ILD detector

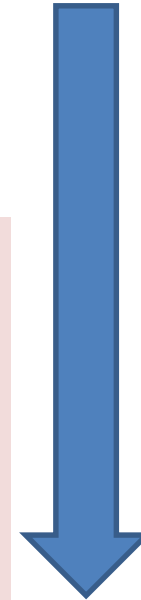


Single particle Studies

- Response studies focussed on one sub-detector
- “easy”, low resource needs, fast

High Level performance studies

Primary Vertex Resolution
Lepton finding/measurement in jets
PID
Jet Energy Resolution
Jet Energy Scale
Flavour-tagging
L.E.P. systematics
Calibration/Alignment



Increasing complexity
Increasing demands on samples

we want to do!

Optimize the ILD detector



Single particle Studies

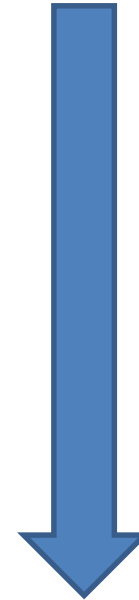
- Response studies focussed on one sub-detector
- “easy”, low resource needs, fast

High Level performance studies

- Tracking, vertexing, particle flow
- Based on dedicated, maybe even unphysical samples
- Based on multiple subdetectors

Physics Performance

- Selected physics channels to study performance for key measurements
- Need full samples, including backgrounds



Increasing complexity
Increasing demands on samples

Do the optimization with a clear view on the physics we want to do!

Benchmarks



WG	Process	Physics	Detector	ECM	Who
Higgs & EW	H->bb/cc/gg	BR	c-tag, b-tag, JER	500 GeV	NN + NN
	H->bb	mass	JER, JES	500 GeV	Ali Ebrahimi (10%) + Junping Tian
	ee->tautau	A_FB, tau-pol, A_LR	tau-reco	500 GeV	Daniel Jeans + NN
	H->mumu	BR	momentum resolution	500 GeV	Shin-ichi Kawada + NN
	H->invisible	BR limit	JER, hermeticity	500 GeV	Yu Kato + NN
	WW->qqlv	MW, TGCs, beam pol.	JES, JER, electron, mu	500 GeV	Kostiantyn Shpak + NN
	vvqqqq	QGCs	JES / JER	1 TeV	Jakob Beyer + NN
	gamma Z	A_LR, sigma_tot, JES	photon, JER/JES, e, mu	500 GeV	NN + NN
Top, Bottom & QCD	tt->bbqqqq	x-section, AFB	b-tag, vertex charge, PID	500 GeV	Amjad + NN
BSM	low deltaM Higgsinos	natural SUSY	low-p tracking, PID, hermeticity	500 GeV	Swathi Sasikumar + NN
	mono-photons	WIMPs / WISPs	photon reco, BeamCal	500 GeV	NN + NN
	Zh, mh < 125 GeV	limit on ZZh coupling	p res, e reco, JER, hermeticity	500 GeV	Yan Wang + NN

Time Schedule (tbc)



1				
2	ILD workshop			
3			Determine editors for ILDD	
4		Start Production	Setup infrastructure for contribution	
5	Fukuoka WS			
6				
7		End Production ???		
8			First versions available	
9			First draft ESUP ready	
10	Arlington WS			
11			Final version ESUP	First complete version ILDD
12			ESUP delivery: 18.12.2018	







