

ILC Post Linac Collimation Meeting

Daresbury Lab UK

15.02.2005

Nick Walker
DESY

ILC@DESY Project Meeting

18.02.2005

Scope of Meeting

- Predominantly meeting of UK groups
 - UK LC-ABD
 - EUROTeV
- Non-UK participants
 - DESY (NW, EE, KB)
 - CERN
- Focus on status of
 - collimation system lattice
 - collimator wakefield studies
 - experimental
 - modelling
- Attendance: ~30

Programme AM

Lattice design and background performance simulation

- Introduction to ILC strawman Design
D. Anal-Kalinin (CCLRC-DL)
- Collimation performance in new ILC design
F. Jackson (CCLRC-DL)
- BDSIM simulations
G. Blair, I. Agapov (RHUL)
- Non-linear collimation for CLIC/LHC
J. Resta Lopez (CERN)
- Discussion

Programme PM

Spoiler design and Wakefield performance

- Collimator Wakefields (Beam Tests) Update
N. Watson (Birmingham), C. Beard (CCLRC-DL)
- Spoiler Wakefields Simulations/Calculations
A. Mercer, G. Kourevlev (Manchester)
- SLAC A-line Optics Modelling
D. Angal Kalinin (CCLRC-DL)
- RF Impedance measurements versus simulation
F. Caspers (CERN)
- Shockwave Calculations
C. Densham (CCLRC-RAL)
- Discussion

Talks on WWW

<http://www.astec.ac.uk/ap/collider/collimmeet15Feb05/index.html>

Collimation Meeting 15 Feb 2005 (Daresbury Laboratory) - Microsoft Internet Explorer bereitgestellt von DESY

Address: <http://www.astec.ac.uk/ap/collider/collimmeet15Feb05/index.html>

Those wishing to attend in person may stay at Daresbury Laboratory Hostel (subject to availability). Please let me know if you require hostel rooms to be reserved.

Meeting Schedule

Meeting to be held in the Tower Seminar Room, Tower Building

Time	Talk	Author
Morning	Collimation Optics and simulation	
0930-0945	Introduction to ILC Strawman Design	D. Angal-Kalinin (Daresbury)
0945-1015	Collimation performance in new ILC design	F Jackson (Daresbury)
1015-1045	BDSIM simulation (Background Calculations and Use in Beam Diagnostics)	G. Blair and I. Agapov (RHUL)
1045-1115	Non-Linear Collimation for CLIC/LHC	J. Resta Lopez (CERN)
1115-1230	Discussion	All
1230-1400	Lunch	
Afternoon	Collimator Wakefields and Physical Design	
1400-1430	Collimator Wakefields (Beam Tests) Update	N. Watson (Birmingham) and C. Beard (Daresbury)
1430-1500	Spoiler Wakefield Simulations/Calculations Adam German	A. Mercer and G. Kourevlev (Manchester)
1500-1515	SLAC A-line Optics Modelling	D. Angal Kalinin (Daresbury)
1515-1545	RF impedance measurements versus simulations	F. Caspers (CERN)
1545-1605	Shockwave Calculations	Chris Densham (RAL)
1605-Close	Discussion	All

[ASTeC Home Page](#)

Also linked from
ilc.desy.de

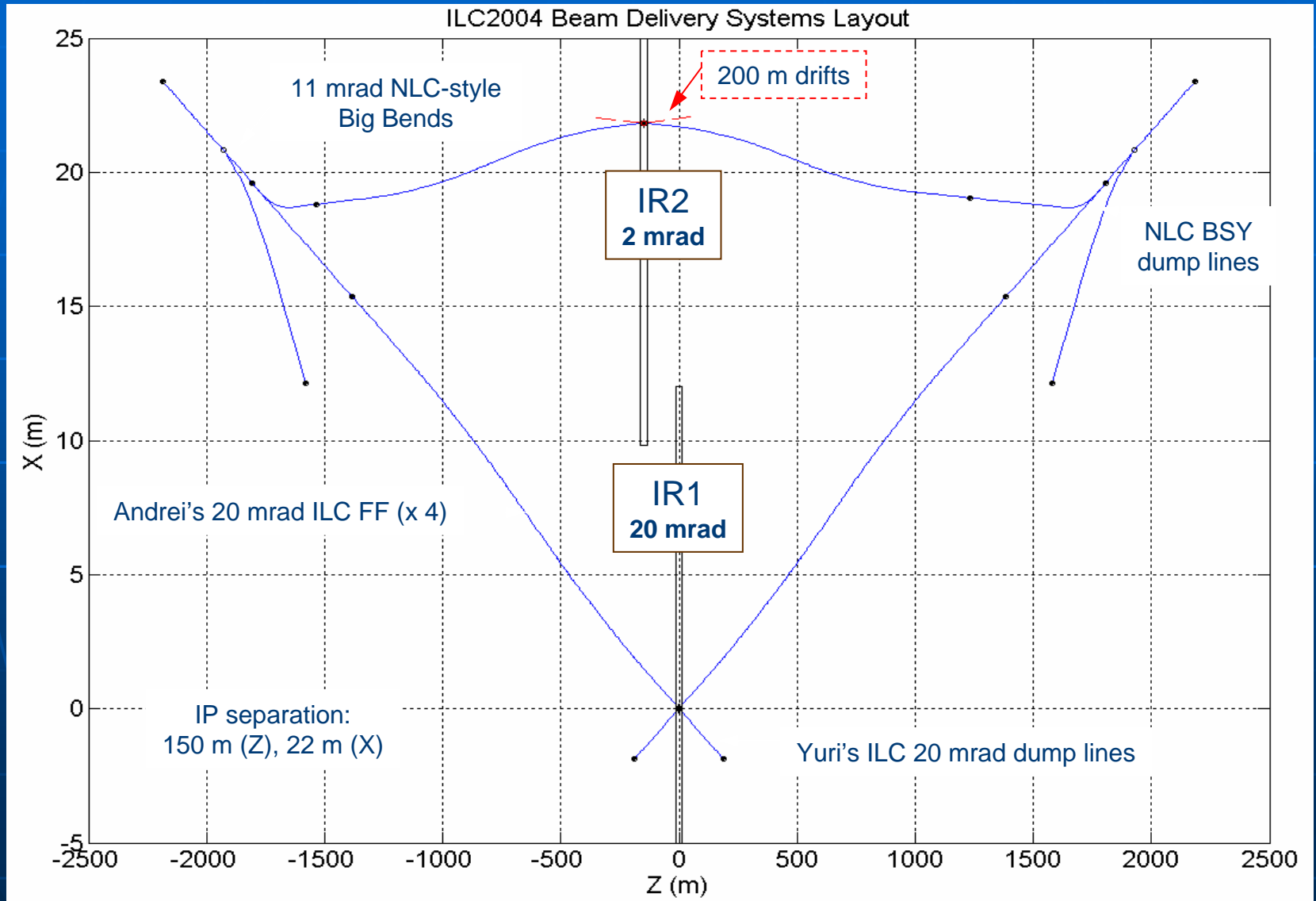
Highlights and Comments

Lattice Design

- Being led (dominated) by SLAC group
- Strawman design with 2 IRs
 - 20 mrad x-ing
(basic evolution from NLC)
 - 2 mrad x-ing
(EU driven)

reported by
K. Buesser
in this
meeting
(SLAC MDI
meeting
review)

Mark Woodley has put the NLC decks together to generate the ILC strawman configuration.



Lattice Status

- Rapid evolution of decks
 - SLAC already on ILC vs 6
 - Mostly modifications to coll. lattice
- Move away from 'NLC consumable collimator' concept 😊
 - Emphasis now on passively protected spoiler
 - (single-bunch survival, fast emergency extraction scheme needs work)

Simulations

- Halo Collimation Efficiency Studies
 - BDSIM – GEANT 4 tracking code
G. Blair (RHUL)
 - STRUCT – Tracing code (incl. geant3 scattering processes)
S. Drozhdin (FNAL)
 - Merlin – ray tracing code with spoiler scattering
Me ☺
- F. Jackson (DL) using them all.
- Some discrepancies still exist
(factors ~ 2)
- What halo to use?
 - flat uniform (TDR style)
 - $1/r$ distribution (a la STRUCT)
 - For benchmarking codes, store file of “standard” 4-vectors.

Lattice: Discussion

- Where's the dumps?
 - emergency extraction concept critical for collimation system design
 - (reported that) SLAC thinks dumps are 'too site dependent' to consider right now
 - WG on dumps at June BDIR meeting (RHUL)
- Collimator philosophy
 - UK group (+ *EUROTeV*) will start to look at alternative layout for lattice
 - Put the primary energy spoiler first!
 - NLC-like design has E-spoiler after β -spoilers
 - MPS arguments

Collimator Wakefields

- Discussion on EUROTeV programme
 - SLAC END-STATION A experiments
 - SLAC committed to install “Wakefield Box” in ESA (moved from sector 2)
 - better access (beam time)
- Spoiler cold-tests very hard
 - originally part of EUROTeV
 - now reduced emphasis
- Primary focus now on
 - SLAC beam-tests
 - Modelling (3D codes)
 - (minor adjustment to EUROTeV programme)

Spoiler Wakefields

- Interesting talk from F. Caspers
- Pulsed-wire impedance measurements in high-frequency regime *very hard* and *expensive*
 - *and results difficult to interpret*
- Still possibility for lower frequency measurements
 - long-range effects (MHz bunch train)
- Analytical theory 'dubious' for anything that's not a TEM mode
 - spoilers are definitely not TEM!
- 3D modelling a must to determine wakefield
- beam dynamic codes being modified to support spoiler wakefield models

Last Comment

- Interesting and well attended meeting
- Much work to do before June BDIR (*EUROTeV*) workshop
 - 20-23.06 RHUL UK
 - <http://www.pp.rhul.ac.uk/workshop/>
- Overall programme still needs a little more definition and focus
 - goal over the next few months