



Progress Report on ELAN

By **F. Richard**¹ on behalf of the **ELAN Steering Committee** (January 2005-April 2005)

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Abstract

This Report intends to describe the recent progress of ELAN in the first quarter of 2005

INTRODUCTION

During the last period ELAN has been concerned with the following topics:

- Participation to specialized workshops dealing with matters related to the preparation of the future international linear collider ILC
- Preparation of the intermediate ELAN workshop embedded in the European meeting on ILC in London
- Preparation of the Paris meeting on future techniques of acceleration
- Discussion on future initiatives for R&D on Linacs

1/ MEETINGS

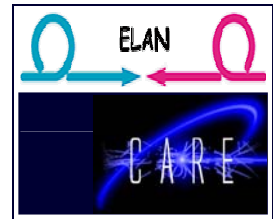
The list of meetings relevant to the ELAN activity is shown in the Table below. Various workshops were supported by ELAN with the following rules:

- the workshop should be clearly related to ELAN activities
- for EU workshops, the ELAN logo should be displayed
- ELAN participants are strongly encouraged to produce an ELAN document related to the workshop
- the involved ELAN WP convener should check by email that the responsible CARE/ELAN contractor agrees to finance the requested participation

On top of the specialized meeting already referred to, ELAN has supported some participation to LCWS05 which for the 1st time was also dealing with accelerator aspects closely related to Physics aspects of ILC.

ELAN Activity	January	February	March	April
ELAN Steering Com. (Phone)	21			12
Joint meeting with other CARE activities				CARE SC CERN 5-6
TESLA (WP2)			DESY 30-01	
CTF (WP1)				
Conferences and workshops with ELAN contribution		WIGGLE2005 Frascati 21-22	LCWS05 SLAC 18-22 Metrology Annecy 10-11	Positron Sources Daresbury 11-13

ILC-European Regional Meeting + ILC-BDIR



The ELAN/ILC workshop in London (May 4-6 2004)

The London meeting will support in parallel the following international workshops:

- ILC-BDIR WG4 Interim Workshop
- Annual EUROTeV Workshop
- CARE/ELAN Workshop

The goal of the parallel workshops is to maximise the efficiency of information exchange across the various groups within these three overlapping programmes, in addition to collaborating groups from the other two regions.

The format of the workshop will be built around 4 days of parallel working groups, where new collaborations will be encouraged and new projects initiated. The workshop will form a milestone towards the second ILC Accelerator Workshop at [Snowmass 2005](#).

LIST OF ELAN PLENARY TALKS:

- | | |
|--|-------------------------|
| • Introduction: Future plans of ELAN | F. Richard(Orsay) |
| • Issues related to normal conducting linear colliders | G.Guignard(CERN) |
| • Recent devel. on SRF Techno in view of Snowmass | L.Lilje (DESY) |
| • New techniques of acceleration | B.Cros (Orsay) |
| • The Frascati workshop | M.E. Biagini (Frascati) |

ELAN PARALLEL SESSIONS:

- WP6: SCRF
- WP4+5: Instrumentation-Beam dynamics common session



The Paris workshop on new techniques of Acceleration (June 2005)

The Work Package ANAD is actively preparing this international workshop. B. Cros, the ANAD convener, is head of the organizing committee. The goal is to discuss the implementation of ultra-high gradient acceleration techniques using plasmas for the development of high energy particle accelerators.

ANAD is also involved in presenting EUROLEAP, a NEST project meant to achieve a laser-plasma accelerator to test the issues related to the control of the properties of an electron beam accelerated to the GeV in a plasma wave. The EUROLEAP outline proposal has been submitted on April 13, 2005 for the first step of evaluation.

Other ELAN supported workshops

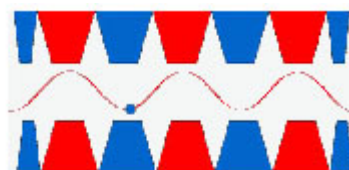
1/ The Annecy workshop was a kick off meeting on **Metrology and Stabilisation for Linear Colliders** with participation of the LTECNC package from ELAN. There were 19 participants, 16 of which belonging to ELAN.

This meeting has been able to define the following major activities:

- modeling, simulation and theory
- development of small and well performing sensors in collaboration with industrial companies
- launch work on actuators where development is needed, define where tests could be done, e.g. ATF
- establish contacts with the designers and builders of the final focus quadrupoles and link the actuator work to possible tests
- development of second generation positioning devices, smaller and lighter
- compare different alignment systems by having a common set-up for tests

2/ The Frascati meeting **WIGGLE2005**

**Mini-Workshop on
Wiggler Optimization
for Emittance Control**
INFN-LNF, Frascati 21-22 February 2005



The **WIGGLE 2005 Mini-Workshop** has been held at the Frascati National Laboratories on **21-22 February 2005** under the auspices of ELAN

The aim of the Workshop was to study wiggler optimization for emittance control and low emittance tuning strategies.

There were 34 participants to this workshop among which 16 belong to ELAN(10 LNF, 4 CERN, 2 DESY) .

All the sessions were of great interest for the ILC damping ring wiggler:

- Wiggler Parameters & Experiences
- Wiggler Technology
- Nonlinear Wiggler Fields, Modeling & Beam Dynamics Studies

A few talks were very specific for ILC and therefore we will ask to the authors if they want to register them as ELAN reports:

- Experimental Results on ATF Wigglers - J. Urakawa, KEK
- Modeling of Wiggler Fields & Application to the ILC Damping Rings - M. Venturini,
- Dynamic Aperture in Damping Rings - Y. Cai, SLAC
- Requirements & Studies for CLIC - M. Korostelev, CERN
- Wigglers vs. Undulators - H. Braun, CERN

3/ The **LCWS05** meeting in Stanford with 400 participants from the 3 regions preparing ILC



The usual purpose of these workshops is to gather the international community of physicists preparing the ILC detectors. During this meeting a large part was devoted to various machine aspects directly related to physics aspects hence the support from ELAN.

There were 18 presentations on **Machine Detector Interface** and 11 presentations on **Accelerator Physics Topics**, 5 of them being given by members of ELAN.



4/ The **TESLA Technology Collaboration** in DESY had 117 persons registered with a very large participation of non EU experts. Participants belonging to ELAN were spread among the following institutes:

Institute	# of people
TUL	1
CCLRC	3
INFN	4
CEA	5
CNRS	5
UROS	2
UWUP	2
TEMF	5
DESY	40

The activity of this collaboration is central to the preparation of ILC through the R&D on SC RF. CARE/ELAN is deeply involved in this effort hence our support.

During this meeting, our convener L. Lilje, in a plenary presentation, has emphasized the role of ELAN in answering the following question (of fundamental interest for ILC):

'What are the requirements for a next generation large-scale cavity preparation infrastructure?'

An ELAN document describing this strategy has just appeared (see the list of publications)

5/ A **'Workshop on Positron Sources for the International Linear Collider'** was held at Daresbury Laboratory 11th-13th April 2005. There were 47 participants.



This workshop has discussed all of the possible positron source options for the ILC that are presently being considered, assessed the outstanding R & D issues that will need to be addressed for each of them to become viable and considered how best these issues should be addressed.

2/ PUBLICATIONS

The list of **ELAN-Documents** is given in table 2 of this report.

The ELAN-Documents are kept in :

<http://esgard.lal.in2p3.fr/Project/Activities/Current/Networking/N2/ELAN/index.php>

Table 2: List of document issued by ELAN/CARE

#	CARE document type and number	Title	Authors and Labs	Date
1	CARE/ELAN document-2005-001	Similarity for ultra-relativistic laser plasmas and the optimal acceleration regime	A. Pukhov, S. Gordienko	January 2005
2	CARE/ELAN document-2005-002	The Automatic Steering System in CTF3	R. Lifshitz, D. Schulte	January 2005
3	CARE/ELAN document-2005-003	Summary of the 2004 CTF3 Steering Workshop	R. Lifshitz, D. Schulte	January 2005
4	CARE/ELAN document-2005-004	Novel External Bunch Injection Scheme for Laser Wakefield Acceleration	A.G. Khachatryan, F.A. Van Goor, J.W.J. Verschuur, K.J. Boller	January 2005
5	CARE/ELAN document-2005-005	Brief account of LCWS05 and of some related matters	F. Richard	March 2005
6	CARE/ELAN document-2005-006	A Laser Cavity for Polarised Positron Production?	K. Mönig	April 2005
7	CARE/ELAN document-2005-007	A Fabry-Perot cavity for FLC polarimetry	A. Variola	April 2005
8	CARE/ELAN document-2005-008	CARE Steering Committee Meeting at CERN	F. Richard	April 2005
9	CARE/ELAN document-2005-009	Requirements for a next-generation cavity preparation infrastructures	L. Lilje	April 2005

APPENDIX

Workshops Supported by ELAN

2005		
<u>WIGGLE2005</u> - Mini-Workshop on Wiggler Optimization for Emittance Control	21 - 22 February	Frascati, Italy
<u>Metrology and Stabilisation</u> - for Linear Colliders Workshop	10 - 11 March	LAPP, Annecy le Vieux, France
<u>LCWS05</u> - International Linear Collider Workshop	18 - 22 March	Stanford, USA
<u>TESLA Collaboration Meeting</u>	March 30 - April 1	Desy, Germany
<u>Positron Sources for International Linear Collider</u>	11 - 13 April	Daresbury, UK
<u>HEEAUP2005</u> - International Workshop on High Energy Electron Acceleration Using Plasmas 2005	8 - 10 June	Institut Henri Poincaré, Paris, France
<u>ILC-BDIR</u> London Beam Delivery Systems	20 - 23 June	London, UK
<u>SRF2005</u> 12 th International workshop on RF Superconductivity	10 - 15 July	Cornell University, US
<u>The 2005 International Linear Collider Physics and Detector Workshop and Second ILC Accelerator Workshop</u>	14 - 27 August	Snowmass, Colorado, USA
<u>SPIE 2005</u> Photonics Application in Industry and Research iV	30 August - 2 September	Warsaw, Poland

Monday 20 June 2005

Tuesday 21 June 2005

Wednesday 22 June 2005

Thursday 23 June 2005

Friday 24 June 2005

AM	09:00	ELAN Plenary and News I (until 10:30)	08:30	Laser Wire Mini Workshop I (Urakawa, J) (until 10:00)	08:30	Extraction and Dumps I (Appleby, R) (until 10:00)	08:30	Plenary Summaries I (until 10:00)	09:00	EUROTeV Steering Committee Meeting (Eckhard Elsen)(Wilson-2-264) (until 12:00)
	10:30	--- Coffee ---	08:30	Final Focus Optics I (until 10:00)	08:30	Diagnostics and Feedback III (until 10:00)	08:30	Final Focus Optics Summary		
	11:00	ELAN Plenary and News II (until 12:00)	08:30	Diagnostics and Feedback I (until 10:00)	08:30	LET Beam Dynamics I (until 10:00)	09:00	Collimation and Backgrounds Summary		
	12:00	--- Lunch ---	08:30	ELAN/ILC SCRF I (until 10:00)	08:30	Final Focus Optics III (until 10:00)	09:30	Extraction Lines and Dumps Summary		
			10:00	--- coffee ---	10:00	--- coffee ---	10:00	--- Coffee ---		
			10:30	Laser Wire Mini Workshop II (until 12:00)	10:30	Extraction and Dumps II (until 12:00)	10:30	Plenary Summaries II (until 12:00)		
			10:30	Final Focus Optics II (until 12:00)	10:30	Diagnositics and Feedback IV (until 12:00)	10:30	Diagnostics and Feedback Summary		
			10:30	Diagnostics and Feedback II (until 12:00)	10:30	LET Beam Dynamics II (until 12:00)	11:00	LET Beam Dynamics Summary		
			10:30	ELAN/ILC SCRF II (until 12:00)	10:30	Final Focus Optics IV (until 12:00)	11:30	ELAN/ILC SCRF Summary		
			12:00	--- lunch ---	10:30	Final Focus Optics IV (until 12:00)	12:00	--- Lunch ---		
	PM	13:30	Introduction to BDIR Topics I (until 15:30)	13:30	Collimation and Detector Backgrounds I (Mokhov, N) (until 15:30)	13:30	Polarised Positron Source I (until 15:00)	13:30	Plenary Summaries III (until 15:30)	
13:30		Final Focus Optics	13:30	ATF I (until 15:30)	13:30	Metrology and Stabilisation I (until 15:00)	13:30	Damping Rings Summary		
14:00		Collimation and Backgrounds	13:30	ELAN/ILC SCRF III (until 15:30)	13:30	GANMVL I (until 15:00)	14:00	Polarised Positron Source Summary		
14:30		Extraction Line and Dumps	15:30	--- coffee ---	13:30	Damping Rings I (until 15:00)	14:30	Metrology and Stabilisation Summary		
15:00		--- Coffee ---	16:00	Collimation and Detector Backgrounds II (Mokhov, N) (until 17:00)	15:00	--- coffee ---	15:00	GANMVL Summary		
15:30		Introduction to BDIR Topics II (until 16:30)	16:00	ATF II (until 17:00)	15:30	Polarised Positron Source II (until 17:00)	15:30	--- Coffee ---		
15:30		Diagnostics and Feedback	16:00	ELAN/ILC SCRF IV (until 17:00)	15:30	Metrology and Stabilisation II (until 17:00)	16:00	Conclusion (until 16:30)		
16:00		LET beam dynamics	17:00	Joint ELAN INSTR/BDYN (until 19:00)	15:30	GANMVL II (until 17:00)	16:00	Concluding Remarks		
16:30		European Regional Director Plenary (until 19:00)	17:00	ELAN/ILC SCRF V (until 19:00)	15:30	Damping Rings II (until 17:00)				
19:00		Welcome Reception (until 21:00)	17:00	Joint Instrumentation and Beam Dynamics (Schulte, D.) (until 19:00)	17:00	Simulation Standards and Interfacing (Agapov, I.) (until 19:00)				
					19:00	Workshop Dinner (until 22:00)				

ILC European Regional Meeting and ILC-BDIR

Acknowledgements

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