

# ILC Positron Systems Collaboration Meeting, Argonne National Laboratory

## Introduction B

J. C. Sheppard  
SLAC

September 17, 2007



***Thanks for coming to this meeting***

***and a special thanks to***

***Wei Gai, Waning Liu, and Pat Malhotra  
for organizing us  
and to ANL for hosting us***

# Nominal Source Parameters

Parameter	Symbol	Value	Units
Bunch Population	$N_b$	$2 \times 10^{10}$	#
Bunches per pulse	$n_b$	2625	#
Bunch spacing	$t_b$	369	ns
Pulse repetition rate	$f_{rep}$	5	Hz
Injection Energy (DR)	$E_0$	5	GeV
Beam Power (x1.5)	$P_o$	300	kW
Polarization e-(e+)	$P$	80(30)	%

# Positron Source Layout

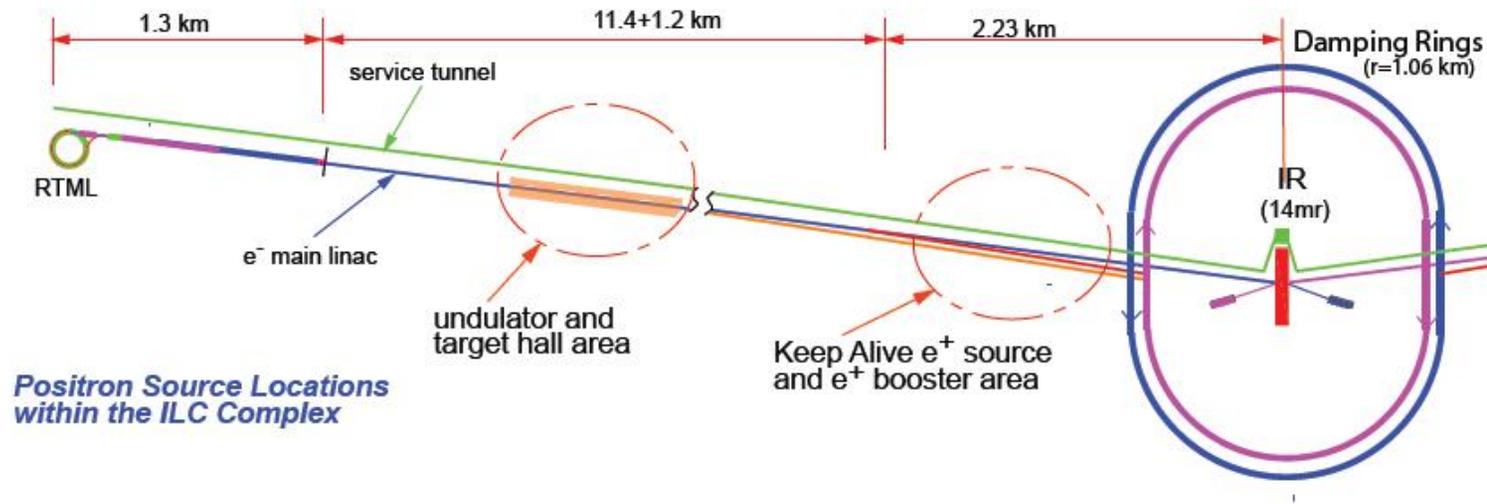


FIGURE 2.3-1. Layout of the Positron Source in the ILC

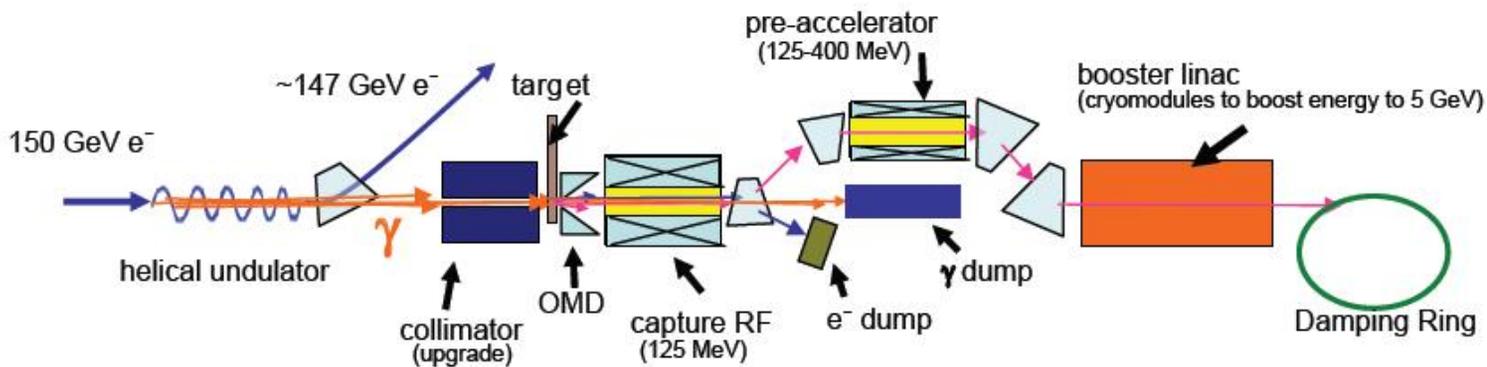


FIGURE 2.3-2. Overall Layout of the Positron Source

# ILC e+ Collaboration Meeting



ILC Positron Source Collaboration Meeting

September 17 - 19, 2007

Argonne National Laboratory



<u>Organizers</u>	The next ILC Positron Source Collaboration Meeting will be held at Argonne National Laboratory, Chicago, IL, on September 17 - 19, 2007 in Building 362, Conference Room F108.
<u>Tentative Agenda</u>	This Workshop is supported by Argonne Accelerator Institute.
<u>Charge</u>	
<u>Registration Form</u>	To obtain visitor's pass to Argonne National Laboratory for Non US Citizens, you need to give 2 weeks prior notice to go through formalities of arranging the visitor's pass. Please provide the information on the registration form.
<u>Transportation &amp; Accommodation</u>	Once your visitor's pass is approved, you need to stop at the Argonne Visitor's Center during normal hours (8:30am-5pm) and show your identifications. After hours the visitor's pass could be picked up at the gate house.
<u>Meeting Room</u>	Be prepared to allow extra time for formalities.
<u>Attendees</u>	
Presentations (TBD)	Please visit this site for <b>Detailed Information</b> which will be updated periodically as information is available.
Meeting Summary	Updated: August 27, 2007
Participants	
<u>Banquet</u>	



# ILC e+ Collaboration Meeting

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## ILC Positron Collaboration Meeting Charge

Revision 1: August 27, 2007  
Bharadwaj/Gai/ Sheppard

The primary purpose of this meeting is to gear up to do the Engineering Design for the ILC Positron Source. In order to plan for this, we would like all presenters to add the following to their talks:

- a summary statement of where they have gotten to in their work and what else needs to be done (prioritized by importance);
- a listing of potential showstoppers and significant improvements
- the identification of essential R&D and systems engineering tasks
- an estimate of how much effort it will take to complete tasks (people, time, money);
- and a snapshot view of the resources available (or not) to do the work.

In order to prioritize the efforts in the context of the Engineering Design phase of the ILC, the topic leaders should attempt to make a (consensus) summary of the issues involving the associated work packages.



# ILC e+ Collaboration Meeting

**Tentative Agenda for ILC Positron Source Collaboration Meeting  
at Argonne National Laboratory, Building 362, F108 on September 17-19, 2007**

## **September 17, 2007**

<b>Morning Coffee and Snacks</b> .....	<b>8:00 – 8:30 am</b>	
<b>Session 1</b> .....	<b>8:30 am - 10:00 am</b>	<b>Wei Gai</b>
Welcome:.....	Harry Weerts/Wei Gai.....	(15 mins)
Introduction.....	John Sheppard.....	(15 mins)
RDR Status:.....	Vinod Bhardawaj.....	(30 mins)
EDR:.....	Jim Clarke.....	(30 mins)
<b>Break</b> .....	<b>10:00 am – 10:30 am</b>	
<b>Session 2 Status Report</b> .....	<b>10:30 am – 12 noon</b>	<b>J. Clark</b>
¼1 XMFR System Parameter Set.....	John Sheppard.....	(30 mins)
Compton Status:.....	Omori.....	(30 mins)
Baseline target prototyping status.....	Ian Baily.....	(30 mins)
<b>Lunch</b> .....	<b>12:00 noon – 1:30 pm</b>	
<b>Session 3 (Modeling and Optics)</b> .....	<b>1:30 pm – 3:30 pm</b>	<b>John Sheppard</b>
Modeling and Simulations Updates.....	W. Liu.....	(30 mins)
Optics and collimations.....	Feng Zhou.....	(30 mins)
Collimation studies.....	Alexander Drozhdin.....	(30 mins)
<b>Break</b> .....	<b>3:30 pm – 4:00 pm</b>	
<b>Session 4 (Target and capturing optics)</b> .....	<b>4:00 pm –6:00 pm</b>	<b>Vinod Bhardawaj</b>
Target Studies.....	Tom Piggot.....	(30 mins)
Eddy current simulation (static and time domain).....	S. Antipov (ANL).....	(20 mins)
OMD design.....	Jeff Gronberg (LLNL)	
OMD Modeling.....	David Wang (ANL).....	(15 mins)
Target work at BINP.....	Jim Clark.....	(15mins)



# ILC e+ Collaboration Meeting

September 18, 2007

<b>Morning Coffee and Snacks</b> .....	<b>8:00 – 8:30 am</b>
<b>Session 1 (Remote Handling/Activation)</b> .....	<b>8:30 am – 10:00 am</b> Jeff Gronberg
ORNL:.....	30 mins)
G4 simulation of the ILC e+ source.....	Andriy Ushakov..... (15 mins)
Activation calculation ANL:.....	(15 mins)?
Remote handling of the radioactive system.....	Jim Grudzinski (ANL).. (15-30 mins)
<b>Break</b> .....	<b>10:00 am – 10:30 am</b>
<b>Session 2 (Undulator)</b> .....	<b>10:30 am– 12 noon</b> Sabine Riemann
Heating of Undulator Vessel.....	Duncan Scott..... (15mins)
Cornell Updates:.....	Alexander Mikhailichenko (15 mins)
RAL Update:.....	Yury Ivanyushenkov.... (15–30 mins)
ANL Update:.....	Suk Hong Kim..... (15 mins)
<b>Discussion</b>	
<b>Lunch</b> .....	<b>12:00 noon – 1:30 pm</b>
<b>Session 3</b> .....	<b>1:30 pm – 3:30 pm</b> Tsunehiko Omori
Polarizations.....	Sabine Riemann..... (30 mins)
Photon and Positron Collimators.....	Ian Bailey..... (30 mins)
News from the Accelerator Part.....	Gudrid Moortgat..... (30mins)
<b>Break</b> .....	<b>3:30 pm – 4:00 pm</b>
<b>Session 4 Compton R&amp;D: KEK/BNL</b> .....	<b>4:00 pm – 6:00 pm</b> Duncan Scott
Polarized positrons generation from polarized electrons in comparison with Compton scheme.....	Alexander Mikhailichenko (15 mins)
Progress at BNL on the Linac Compton source Design.....	Vitaly Yakimenko:..... (30 mins)
Optical Cavity R/Ds in France and Japan.....	Tsunehiko Omori..... (30 mins)
Clic Undulator Scheme.....	Wei Gai..... (15 mins)
Discussion.....	(30 mins)

**Dinner on September 18 at 6:30 pm**

**September 17, 2007**

*J.C. Sheppard/SLAC*



# ILC e+ Collaboration Meeting

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## September 19, 2007

Morning Coffee and Snacks.....	8:00 – 8:30 am	
Session 1 EDR Session.....	8:30 am – 10:00 am	Ian Bailey
Systems Integration and work Packages.....	Jim Clark.....	(30 mins)+30
Compton EDR.....	Tsunehiko Omori.....	(30 mins)
Break.....	10:00 am – 10:30 am	
Session 2 Discussion and Summary.....	10:30 am – 12 noon	John Sheppard
.....	All	
Adjourn.....	12:00 noon	

ILC Positron System Design and R&D Goals in Support of the EDR

**Topical Structure:**

*Categorize the activities into ~~9~~ **10** Topics. Each Topic has a named Discussion Leader who is responsible to organize the discussions (for their Topic) for the Collaboration Meetings.*

**Topical Discussion:**

*Each activity should be introduced as to its purpose; its contribution to e<sup>+</sup> production; the technical feasibility; and need for design, simulation, r&d, and prototyping. The present status of each activity should be discussed including the availability of resources (people and funding), milestones, schedules, and impediments.*

***Topic Leaders: 2006 RAL Meeting***

<b>A. Target Systems</b>	<b><i>Ian Bailey/Tom Piggott</i></b>
<b>B. OMD</b>	<b>Jeff Gronberg</b>
<b>C. Capture RF</b>	<b>Juwen Wang</b>
<b>D. Target Hall</b>	<b>Vinod Bharadwaj</b>
<b>E. Undulator Scheme</b>	<b>Jim Clarke</b>
<b>F. Laser-Compton Scheme</b>	<b>Masao Kuriki</b>
<b>G. Conventional Scheme</b>	<b>Bharadwaj/Sheppard</b>
<b>H. Accelerator Physics</b>	<b>Gudi Moortgat-Pick</b>
<b>I. Polarization</b>	<b>Sabine Reimann</b>

***Proposed Topic Leaders: 2007 ANL Meeting***

- |                                |                                     |
|--------------------------------|-------------------------------------|
| <b>A. EDR Activities</b>       | <b>Jim Clarke</b>                   |
| <b>B. Target Systems</b>       | <b>Ian Bailey/Tom Piggott</b>       |
| <b>C. OMD</b>                  | <b>Jeff Gronberg</b>                |
| <b>D. Capture RF</b>           | <b>Juwen Wang</b>                   |
| <b>E. Target Hall</b>          | <b>Vinod Bharadwaj</b>              |
| <b>F. Undulator Scheme</b>     | <b>Jim Clarke</b>                   |
| <b>G. Laser-Compton Scheme</b> | <b>Masao Kuriki/Tsunehiko Omori</b> |
| <b>H. Conventional Scheme</b>  | <b>Bharadwaj/Sheppard</b>           |
| <b>I. Accelerator Physics</b>  | <b>Wei Gai/Gudi Moortgat-Pick</b>   |
| <b>J. Polarization</b>         | <b>Sabine Reimann</b>               |

ILC Positron System Design and R&D Goals in Support of the EDR

***Discussion:***

*Every thing is open for discussion: format, discussion leaders, topics, organization, schedule, ILC*

*Will have a session on Wednesday to discuss how this meeting has gone; what changes are required; what went well; what is clearly not working;.....*

*Are we having enough meetings? Is there any time to meet more often, especially given the rolling GDE meetings.....*

ILC Positron System Design and R&D Goals in Support of the EDR

***Discussion, comments, suggestions***