ILC GDE Activities Update and Undulator Scheme Status

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ILC GDE Activities Update, to date

December, 2005: Undulator Baseline Documentation – BCD

March, 2006: RDR Configuration: the undulator scheme

April, 2006: RDR Parts Inventory to Technical Systems for Costing

July, 2006: RDR Preliminary Costing Results (the Big Secret)

August-September, 2006: Cost comparisons between undulator and conventional schemes; central Injector layouts and initial costing activities.

September, 2006 GDE Decision: Undulator Scheme and Central Injector; ILC Positron Collaboration Meeting at RAL, UK

November, 2006 Valencia Meeting to discuss layout

ILC GDE Activities Update, thru end of calendar 2006

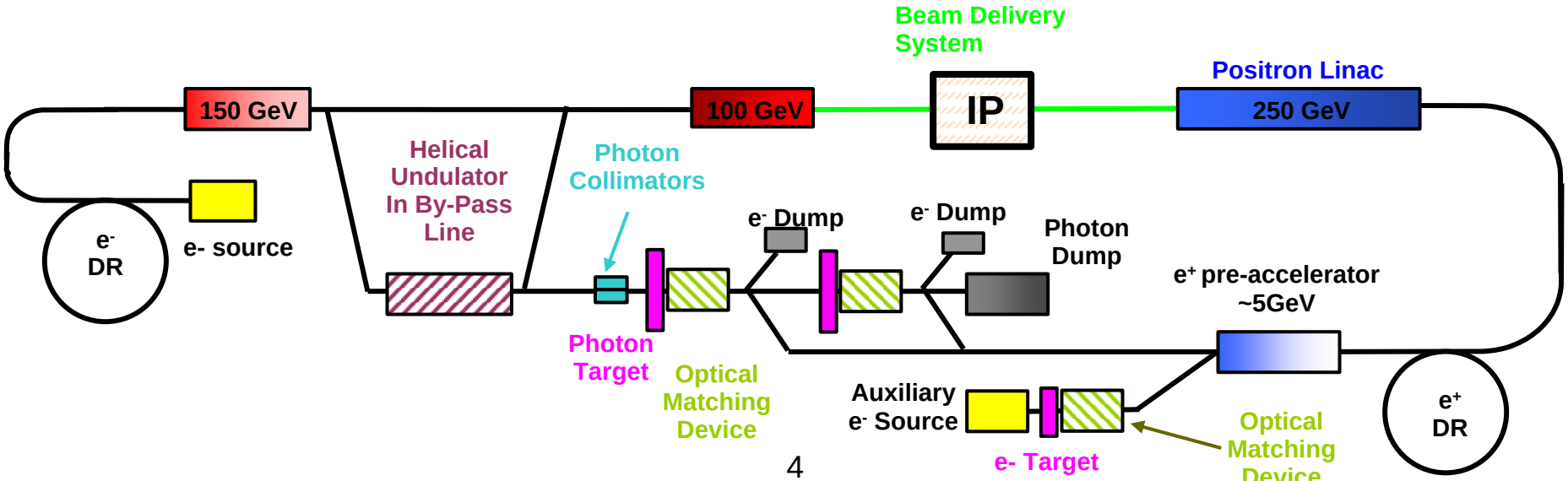
September, 2006: RDR Text Outlines (N. Phinney editor); no feedback

November, 2006: Valencia Meeting: RDR Text and Costs (???? rumors of short delay with appropriate rescoping of RDR deliverables….)15 pages for undulator scheme; not clear how alternatives are being handled…..deferred till Beijing, February, 2007

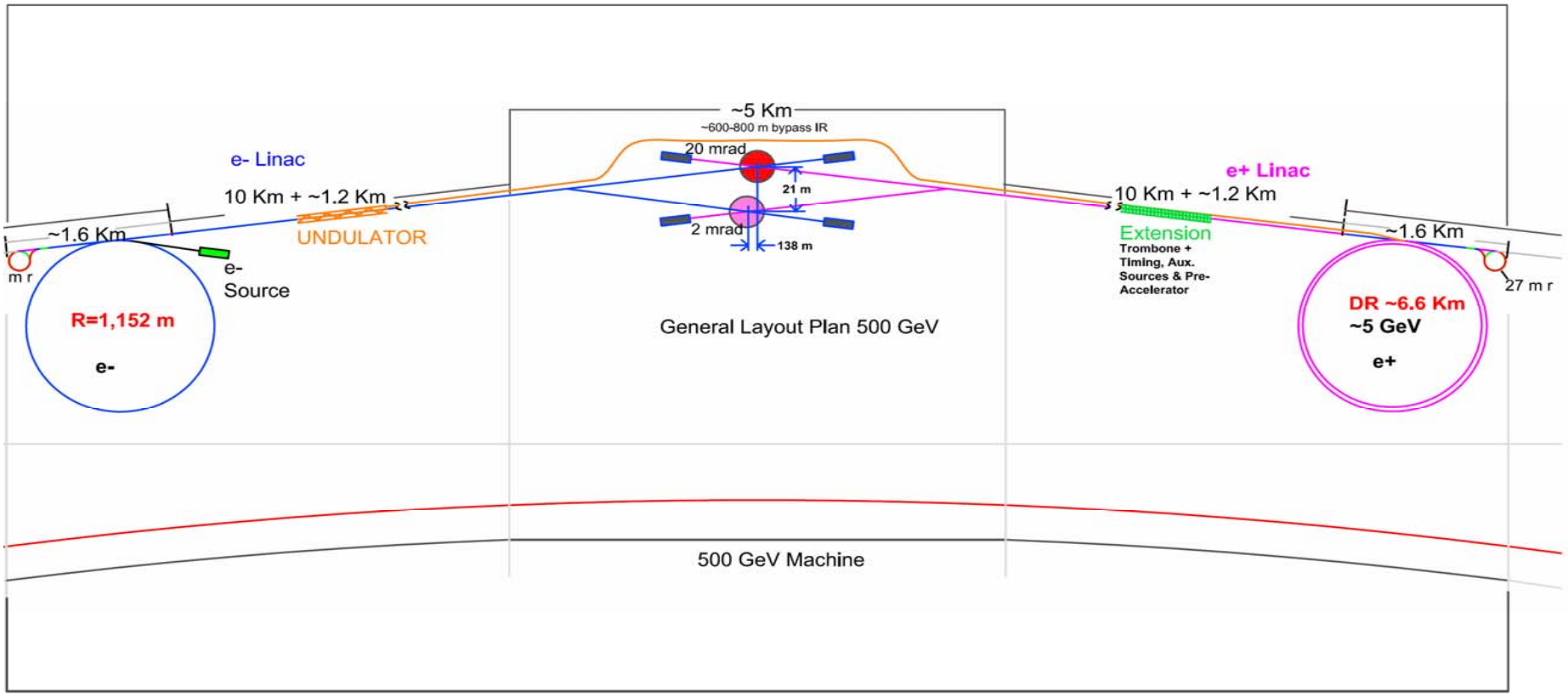
Valencia meeting to agree to RDR configuration and inventory

Layout of ILC Positron Source: December, 2005

- Photon production at 150 GeV electron energy
- K=1, λ=1 cm, 100 m long helical undulator
- Two e+ production stations (1 as backup) + KAS
- Pulsed OMD (shielded target)
- Keep alive auxiliary source is e+ side
- Timing Insert and Trombone in PML Extension

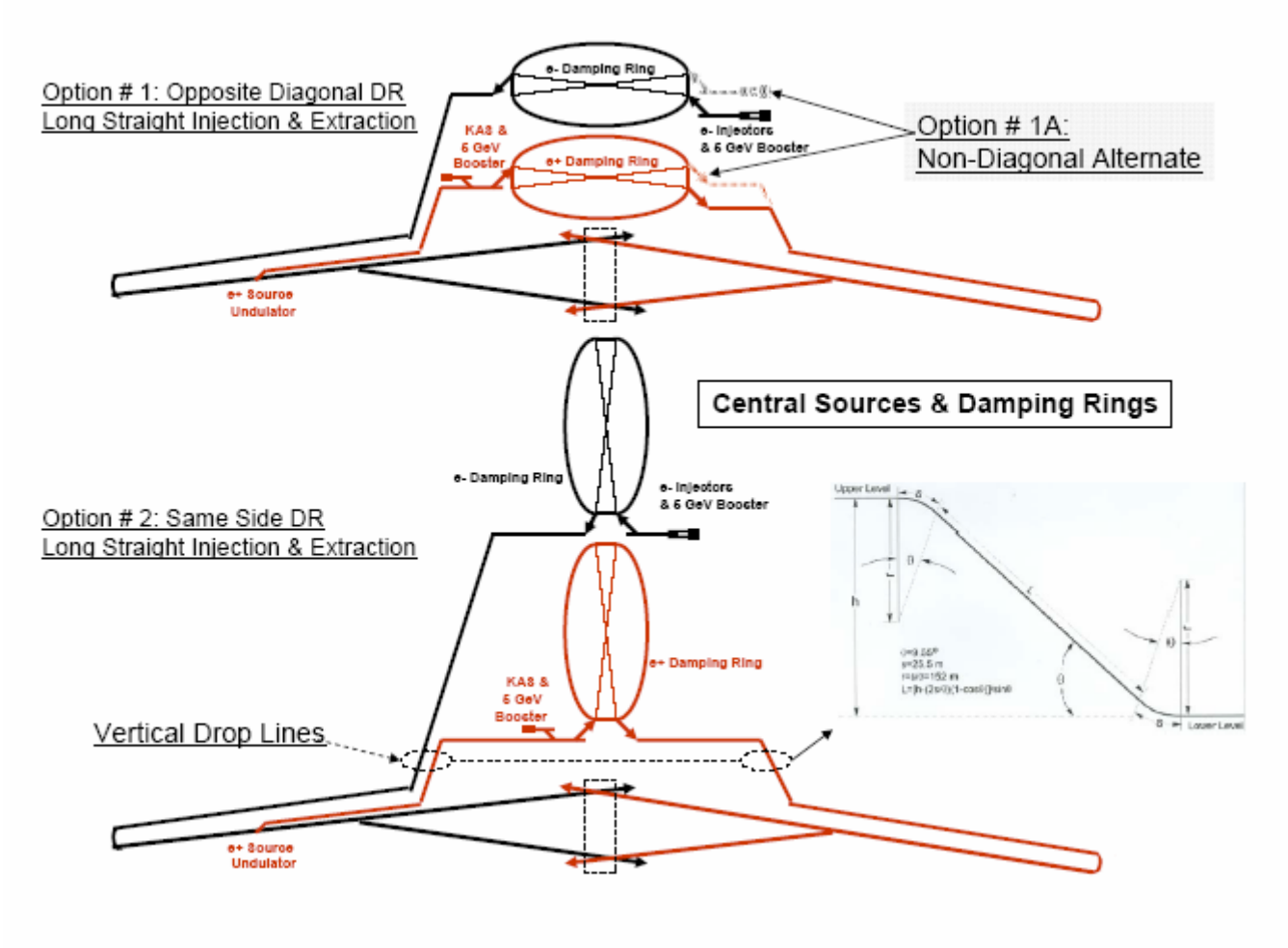


Positron System Site Layout: July 2006



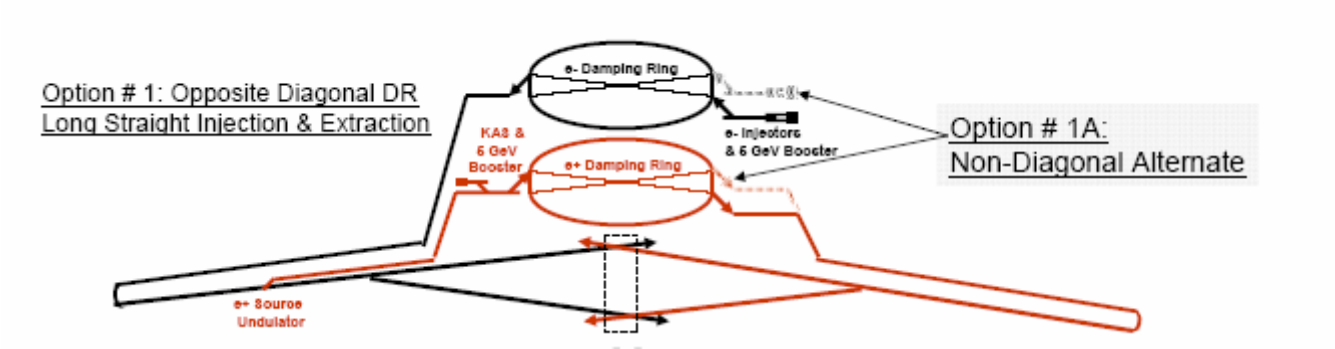
General Elevation View

Positron System Site Layout Discussions: September, 2006



Layout of ILC Positron Source: November, 2006

- Photon production at 150 GeV electron energy
- K=1, λ=1 cm, 100 m long helical undulator
- (K=0.92, λ=1.15 cm, 100?? m long helical undulator, UK design under consideration)
- One e+ production station (no backup) + KAS
- Pulsed OMD (shielded target)
- Keep alive auxiliary source, 10% intensity



Positron System Site Layout Discussions: November, 2006

Central Injector Decision:

Electron dr and a single positron dr in a single tunnel located at the center of the ILC site

Two 14 mrad crossing angle IPs at a different elevation (~10-20 m) from dr's

Positron production still at 150 GeV point in electron main linac

e+ transport line reduced from 18.7 km to about 5 km

Removal of timing insert (still need to do correct timing) and 2nd IP trombone

Reduction of number of BPMs and correctors in 5 km transport line

Deletion of redundant e+ production target

Cost reductions thru hardware reduction

~30 km of low emittance, damped beam added to RTML systems

Ongoing discussions that have lives of their own

Positron System Site Layout Discussions: November, 2006

Impact to ongoing work for ILC Undulator Scheme:

No real changes to the technical challenges

No parameter changes

Reduction of transport lines

Rework of injection/extraction schemes

Still have same technical challenges and cost drivers

Work continues

Meeting with GDE Cost engineers in Valencia, closed session: primarily to settle on layout and protocols for information exchange