

The Minimal machine



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Positron Source Team Meeting

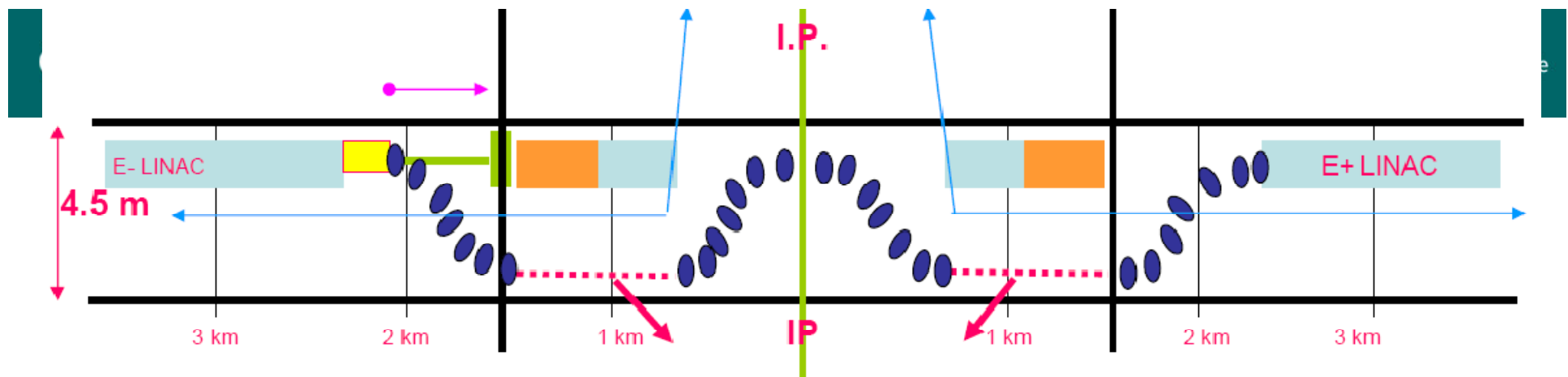
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- “a design that fulfils the basic physics requirements as outlined in the WWS document, but where overhead, margin, and possible design conservatism has been pushed back to an absolute minimum”
- Nick & Ewan have written a memo summarising the concept which can be found (and discussed) at http://www.linearcollider.org/weblog/accelerator_design/
- Want basic spec agreed by ILC 08 (Nov 2008)
- “Studies to be concluded in 2009, leading to a re-baseline of the machine design in early 2010 (end of TD Phase 1)”

1. Two 6.4 km circumference DRs in the same housing located at the central campus. The rings ('race-track like') will be in the same plane as the BDS but transversely offset by ~ 200 m to clear the IR area. The long straight section will be parallel to the BDS. Injection and extraction will be in the same (closest) straight section of the damping rings.
2. A common beam-tunnel will be used to house the **upstream part of the BDS and the e+ and e-sources.**

3. **The positron undulator-based source will be moved to the end of the high energy electron linac and integrated into the BDS system in a cost effective fashion.**
4. The electron source will like-wise be installed in the upstream end of the positron BDS.
5. **Capture RF and 5 GeV injection linacs will be installed in the same tunnel in parallel to the BDS**

6. The current RDR positron **“Keep-Alive Source” (KAS) will be removed and replaced by a few-% auxiliary positron source** constructed from a 500 MeV S-band linac and **using the same thin target as the primary (high-intensity) source**. A positron DR injection system that supports accumulation would also be desirable to maximise the (commissioning) benefit of this auxiliary source.
7. A single-stage bunch compressor will be adopted providing an overall compression ration of a factor of 20.
8. A minimum 500 GeV BDS will be initially considered.



-  Super conducting accelerator systems, main linacs and boosters
-  Room temperature accelerators for e+ and e- injectors
-  Up to 200 m for undulator, present design plus expansion
-  400m Photon beam plus 100 m for E+ target and capture sections
-  Access shaft and vault, combining end of linac and e+ target requirements
-  Collimation, skew correction, and betatron collimation sections of BDS
-  Fast kickers, septa and tune up dump beamline
-  Bending sections of primary beams, after undulator and energy collimation, final transformer etc, sections of beam delivery systems
-  E+/- lines to and from DR's. Return lines on ceiling.
-  Location (out of plane) of e- injector and 500 MeV, short pulse, S-band linac for auxiliary positron source

- List of issues relevant to positron source has been requested for tomorrow's TAGL meeting
 - Problems
 - Possible solutions
 - Advantages
- Please make comments
 - Now
 - To me by email urgently
 - Publicly through the web log system
http://www.linearcollider.org/weblog/accelerator_design/