



Risk minimum approach for ILC e^+ source

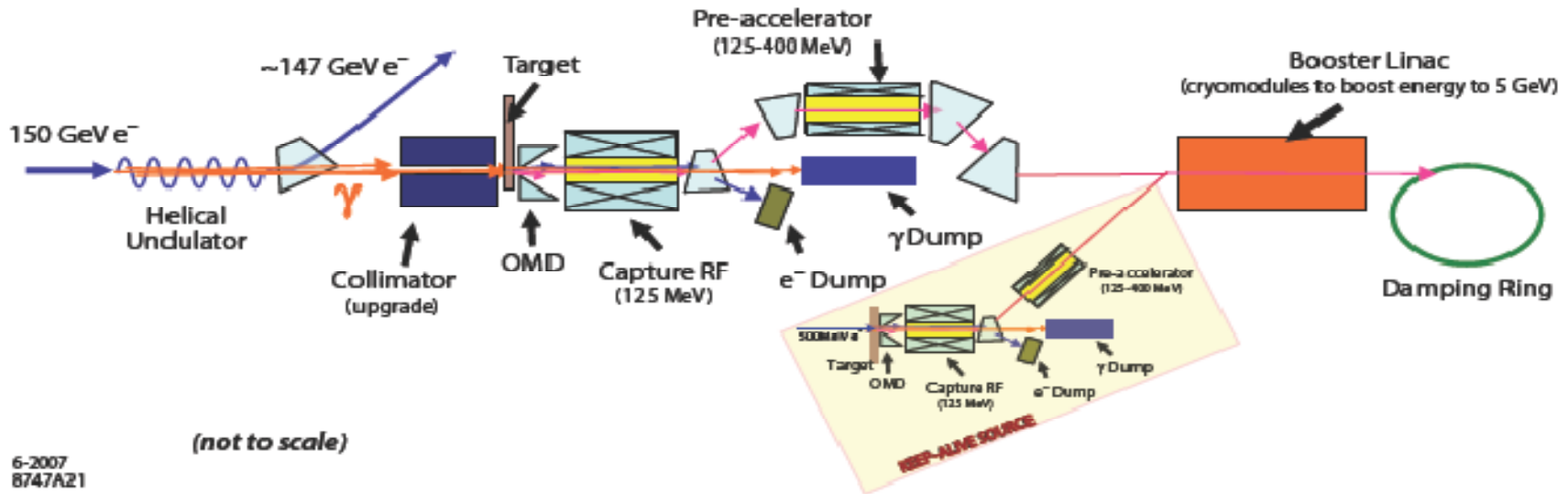
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Consider E+ Source Layout (2)

- Lengths of the RDR e+ systems in meters

Undulator	Drift&Dogleg	Target+ Capture	Pre-accelerator	TOTAL
100(200)	400	100	500	1200



Q? Can we insert a warm 400 MeV E-accelerator in the drift/dogleg section and use the same target/capture, preaccelerator as a new type of “KAS” YES, WHY NOT?



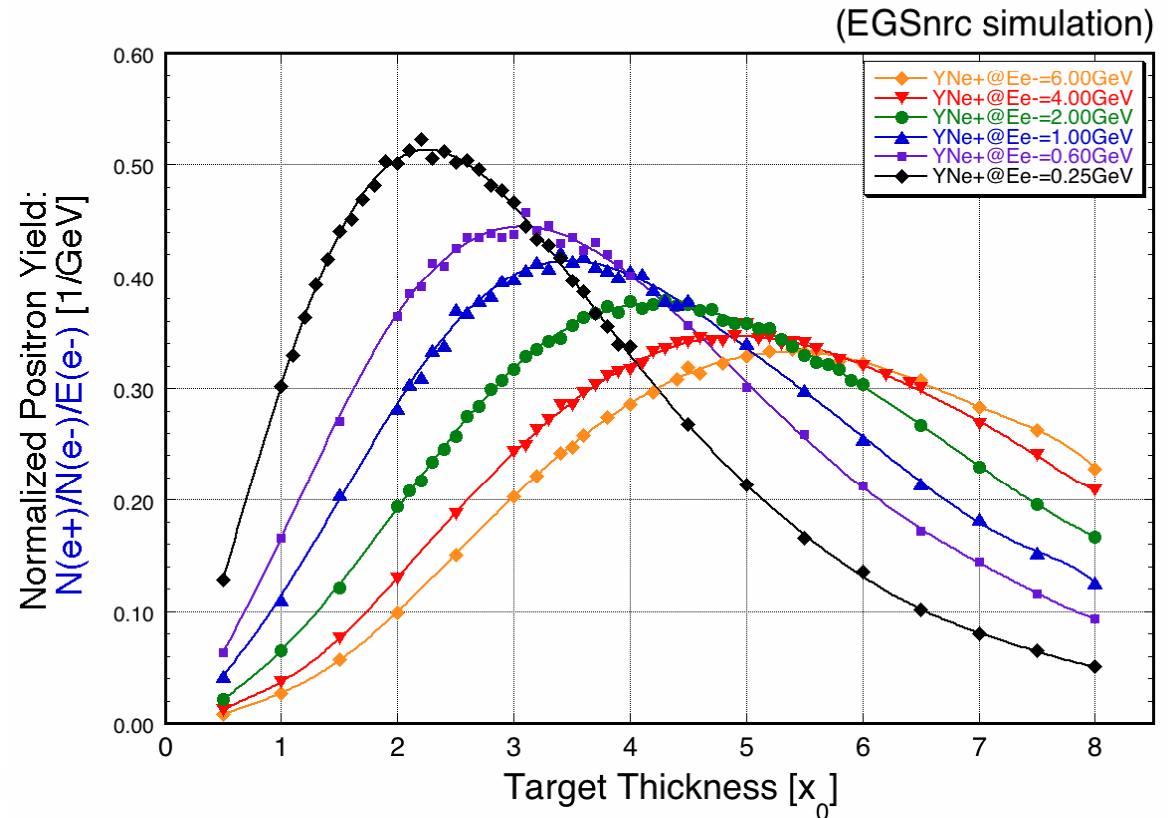
KAS or KAS

- We need to review the design *requirements* for a KAS and its cost/benefits to overall ILC operation.
- RDR design has everything (except polarization) at 10% intensity...Injector, L-band linac, tgt/capture section and pre-accelerator. *Large and expensive!*
- An extreme alternate *KAS* could be a compact S-band single bunch linac whose e- beam uses the photon E+ tgt, capture and pre-accelerator, producing single bunches at a few % intensity.
- *Inexpensive, compact and could fit between the undulator and target alongside the photon and high energy e beam!*



What is **KAS** or *KAS*

- 600 MeV driver with 0.4X0 target makes ~3% intensity.
- The same driver with 3X0 target makes >20% intensity.
- 0.4X0 Ti alloy and 4X0 W has same thickness.





KAs

- Start up e⁺ source is very important in MD phase.
- In the initial phase, 3X0 W-Re instead of 0.4X0 Ti alloy improves the e⁺ intensity.
 - 600 MeV single bunch S-band accelerator (30m) can generate >20 % intensity e⁺ beam.
- This single bunch can be accumulated in DR forming the ILC format beam with 20% bunch charge.
- This beam is more useful for commissioning.
- The target can be replaced when undulator e⁺ is ready for the commissioning. KAS becomes a small backup with a few % intensity.

- 400m drift space is enough to accommodate 6 GeV e- linac.
 - It could be driver linac for conventional e+ source with the full intensity.
 - It also compatible to Linac based laser compton e+ source.
- Tunnel for undulator section is therefore compatible to all schemes which we have considered. Even after completion of tunnel, we can switch e+ scheme among them.
- Because of this flexibility, this approach (KAs or κAS) minimizes unexpected risks.



Summary

- Risk minimum approach without additional CFS inspired by Ewan's talk, is considered.
- KAS ability can be enhanced by replacing target material at MD phase, when the start up e+ source is more important.
- All e+ schemes are compatible to the baseline CFS.
- We should consider scenario to minimize possible and unexpected risks. It is an issue in TDP and this approach is one candidate.