

A Positron Target Concept for the ILC

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The ILC polarized positron source design is based on a polarized photon beam striking a 14 mm Ti target. Because both the instantaneous and average power are high, the concept of a rotating Ti hoop in the accelerator vacuum is accepted. The TDR baseline uses water cooling introduced through rotating seals, and rotating seals are used for an axial drive shaft. We are developing a concept using radiation cooling of high performance Ti alloy blades to a water cooled vacuum can, completely eliminating water channels in the vacuum space. In addition, we are developing a concept for magnetic suspension and drive of the hoop, eliminating shaft seals, that does not require permanent magnets, and so should survive in the high radiation field of the target.

The hoop must rotate at ~2000 rpm, and thus Eddy current drag from the focusing elements are important

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