

The Polarized Electron Source for the International Linear Collider (ILC) Project

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ABSTRACT

The ILC project will be the next large high energy physics tool that will use polarized electrons (and positrons). For this machine spin physics will play an important role. The polarized electron source design is based on electron injectors built for the Stanford Linear Collider (polarized) and Tesla Test Facility (unpolarized). The ILC polarized electron source will provide a 5GeV spin polarized electron beam for injection into the ILC damping ring. Although most ILC machine parameters have been achieved by the SLC or TTF source, features of both must be integrated into one design. The bunch train structure presents unique challenges to the source laser drive system. A suitable laser system has not yet been demonstrated and is part of the ongoing R&D program for ILC at SLAC. Furthermore, ILC injector R&D incorporates photocathode development, increasing available polarization, and improving operational properties in gun vacuum systems. Another important area of research and development is advancing the design of DC and RF electron gun technology for polarized sources. This presentation presents the current status of the design and outlines aspects of the relevant R&D program carried out within the ILC community.