

**The Optical Design of the PEP-II Injection Beamlines**<sup>\*</sup>, T. FIEGUTH, SLAC - The optical design of the PEP-II electron and positron Injection Beamlines is described. Use of the existing high power, low emittance beams available from the SLC damping rings require that pulsed extraction of 9.0 GeV electrons and 3.1 GeV positrons for injection into the PEP-II rings occur in the early sectors of the accelerator. More than 5 kilometers of new beam transport lines have been designed and are being constructed to bring these beams to their respective rings. The optical design maximizes the tolerance to errors especially to those contributing to beam size and position jitter. Secondly, the design minimizes costs by utilizing existing components or component designs and minimizing the number required. Here we discuss important attributes including choice of lattice, specification of error tolerances, including errors in construction, alignment, field errors, power supply stability, and orbit correction. Finally, we discuss the effect of higher order aberrations and emittance growth due to quantum fluctuations. An optical design exists for correcting these effects which will be implemented if proven necessary.

\* Work supported by Department of Energy Contract DE AC03-7600515 (SLAC).