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Precision Electroweak Measurements at a Future e^+e^- Linear Collider (15' + 5')

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The International Linear Collider (ILC) project aims to build a linear electron-positron collider capable of precision physics measurements at center-of-mass energies ranging from 91 GeV to 1 TeV using polarized electrons and positrons. In this contribution an overview is presented of the potential of such a machine to advance precision studies of electroweak physics with an emphasis on the opportunities in W and Z physics. Prime targets are vastly improved measurements of the gauge-boson couplings, complementary and robust precision measurements of the W mass in the few MeV range from data collected both well above and close to the WW threshold, and a precision measurement of the left-right asymmetry of the Z. In order to take advantage of the high statistics envisioned for ILC, particular attention to the control of systematics associated with the understanding of the initial state experimental conditions is mandatory. Experimental strategies for controlling systematics associated with the determination of the center-of-mass energy, the beam polarization, the differential luminosity spectrum and the absolute luminosity determination will be highlighted. Related results from the Compact Linear Collider project will also be discussed where appropriate.

Submitted on behalf of the ILC physics and detector study.

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