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Measurement of the Left-Right Asymmetry in Z0 Events at SLAC [*]

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submitted by

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University of Washington

Abstract

Measurements of the Left-Right Asymmetry
in Z^0 events at SLAC

by Anthony Frank Szumilo

Chairman of the Supervisory Committee: Professor Thompson H. Burnett
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Recent results from the 1992 and 1993 left-right asymmetry cross section measurements at the Stanford Linear Accelerator Center are presented. Measurements made with SLAC running with a center-of-mass energy at the Z^0-pole (91.2 GeV) by the SLD detector and an average electron beam polarization of $22.4 \pm 0.7\%$ for 1992 and $62.6 \pm 1.2\%$ for 1993. The asymmetry measured was $A_{LR} = 0.100 \pm 0.044$ and $A_{LR} = 0.1656 \pm 0.0073$ for the 1992 and 1993 runs, respectively. This in turn allows us to calculate the weak mixing angle value of $\sin^2 \theta_w = 0.2378 \pm 0.0056$ and $\sin^2 \theta_w = 0.2288 \pm 0.0009$ for the two data sets.

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