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Littlest Higgs Model and W pair production at ILC

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Among the viable alternatives to the
Standard Higgs Mechanism is the recently proposed Little Higgs
models. The advantage here is that the model has an elementary
light neutral scalar particle without the hierarchy problem. The model
has two heavy charged gauge bosons W_H and one heavy neutral gauge
boson, Z_H, in addition to the standard W and Z. We have
investigated the W pair production at ILC to study the Littlest Higgs
model using different observables. Specifically,
polarisation fraction of W boson is expected to be measured very
accurately at ILC. We use this to put limit on the scale parameter,
f in the model.

Summary

Little Higgs model with a global SU(5) broken down to SO(5) with
a gauge group SU(2)X SU(2) X U(1) broken down to SU(2) X U(1) (Std Model)
is considered to study e+e- -> W+W- at ILC.

Polarization fraction of W produced changes from 2% to 4% in the case of
longitudinal W, for symmetry breaking scale f=1 Tev, and mixing parameter cos(theta)
=0.35, at an ILC with root(s)=800 GeV.

In the semileptonic decay channel, leptonic angular and energy distributions are
also found to be sensitive to the model.

Use of polarized beams will improve the sensitivity.
(computation pending)

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