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Non-universal Gauge Bosons Z' and the Process $e^+e^-\to f\bar{f}$

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Abstract: We discuss the observability of the non-universal bosons Z' predicted by topcolor-assisted technicolor (TC2) models in the near future high-energy linear $e^{+}e^{-}$ collider (LC) experiments via studying its contributions to the processes $e^{+}e^{-} \to b\bar{b}$ and $\tau\bar{\tau}$. We find that the signals of the new particle Z' can be detected by measuring the relative corrections to the cross sections and the ratio of signal over square root of the background ${S}/{\sqrt{B}}$ for these two processes in the LC experiments. In most of the parameter space of TC2 models, it is difficult to observe the virtual effects of the Z' exchange on the forward-backward asymmetries $A_{FB}(b\bar{b})$ and $A_{FB}(\tau \bar{\tau})$.

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