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Scalar leptoquarks in the light of R(D) anomaly and electroweak precision measurements.

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There has been persistent (> 3σ) disagreement between the Standard Model prediction and experimental measurements of $R_{D^{(*)}} = \mathcal{B}(B \to D^{(*)} \tau \nu_{\tau})/\mathcal{B}(B \to D^{(*)} l \nu_{l})(l = e, \mu)$. This anomaly may be addressed by introducing interactions beyond the Standard Model involving new states, such as leptoquarks. In this talk, I look at the constraints on third generation scalar leptoquarks from electroweak precision measurements at LEP and SLC. Among the electroweak observables, the partial decay width of $Z \to \tau \bar{\tau}$ places the strongest constraints. If one assumes Minimal Flavor Violation (MFV) in the quark sector, the leptoquarks masses and couplings required to satisfy the $R_{D^{(*)}}$ anomaly are strongly disfavored by electroweak data. Without MFV, one may still avoid electroweak constraints and address the anomaly.

Summary

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