

Probing SMEFT via the Lam-Tung Relation

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The violation of the Lam-Tung relation in the Drell-Yan process serves as a sensitive observable for probing dipole operators as well as three scalar and tensor types of four-fermion operators. Since these operators do not interfere with the SM, their leading contributions to the violation arise at order $1/\Lambda^{-4}$. In this talk, we explore different strategies for constraining these operators. Dipole operators are mainly probed through measurements near the Z-pole, while the four-fermion operators induce energy-growing effects that become significant in the high-energy (off-pole) region. By connecting angular distributions to specific operator sensitivities, the Lam-Tung relation provides a novel avenue for testing the SM and unveiling possible signs of new physics at the LHC and future colliders.

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