

Revisiting the vector leptoquark explanation of the B-physics anomalies

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A thorough investigation of the vector leptoquark (LQ) hypothesis for a combined explanation of the B-physics anomalies is presented. This hypothesis is discussed both using an Effective Field Theory approach and in the context of a complete ultraviolet completion of the Standard Model (SM) based on the hypothesis of flavour non-universal gauge interactions (which could provide an explanation of the SM flavour puzzle). The impact of recent results from both high-pT searches and B-physics are discussed in detail: the vector LQ hypothesis turns out to be in good agreement with all available data. The implications of this hypothesis for a series of key low-energy observables, namely $B_s \rightarrow \tau\tau$ and $\tau \rightarrow \mu$ Lepton Flavour Violating processes both in τ and in B decays, are discussed in detail.

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