

Constraining resonances by using the EW effective theory

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Taking into account the mass gap between the Standard Model (SM) and possible new particles, the use of effective field theories is appropriate. We adopt here the non-linear realization of the electroweak symmetry breaking: the electroweak effective theory (EWET), also known as Higgs effective field theory (HEFT) or electroweak chiral Lagrangian (EWChL). At higher energies we assume a resonance Lagrangian which couples the SM states to bosonic and fermionic resonances. Integrating out the resonances and assuming a well-behaved short-distance behavior, we determine or constraint most of the bosonic low-energy constants in terms of resonance masses. The fit of these low-energy constants allows us to learn about the high-energy scales.

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