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Catching Heavy Vector Triplets with the SMEFT: from one-loop matching to phenomenology

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An important question for both phenomenologists and experimentalists is whether one can put limits on UV model parameters by matching the full theory onto the SMEFT. I will show that this is possible but the limits set through a SMEFT framework are weaker than they would be for the full model. This is because truncating the SMEFT Lagrangian at dimension six and matching to the full model introduces additional theoretical uncertainties.

I show that this impacts the limits set for the Heavy Vector Triplet extension of the Standard Model, one of the reasons being that the constraints now depend on the matching scale. I use the SFitter framework to derive limits taking into account Higgs measurements and electroweak precision data previously implemented. In addition, I discuss the impact of two new resonance searches for VH and VV on the fit.

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