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## Capping the cone of positivity bounds: dimension-8 Higgs operators in SMEFT

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SMEFT Wilson coefficients are subject to various positivity bounds in order to be consistent with the fundamental principles of S-matrix. Previous bounds on dimension-8 SMEFT operators have been obtained using the positivity part of UV partial wave unitarity and form a (projective) convex cone. We implement UV unitarity conditions that go beyond positivity in an optimization scheme with dispersion relations in a multi-field EFT. Using Higgs scattering as an example, we demonstrate how to obtain closed bounds in the space of the three relevant dimension-8 coefficients, making use of the UV unitarity conditions as well as so-called null constraints that arise from full crossing symmetry. Specifically, we show that they are bounded by inequalities schematically going like  $C < calO((4\pi)^2)$ . We compare the newly obtained upper bounds with the traditional perturbative unitarity bounds from within the EFT, and discuss some phenomenological implications of the two-sided positivity bounds in the context of experimental probes of Vector Boson Scattering.

Secondary track

T08 - Higgs Physics

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