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## On the Weyl gravity extension of Higgs inflation

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We consider the embedding of Higgs inflation with a non-minimal coupling into the Weyl gravity. In this model, the effective current-current interactions from the heavy Weyl gauge field cancel the non-canonical Higgs kinetic term in Einstein frame, so the unitarity problem of the original Higgs inflation becomes less severe. For a simple case where the couplings of the heavy Weyl gauge field appears from the non-minimal couplings to the Ricci curvature scalar in Weyl gravity, we find that the resultant model for Higgs inflation is the same as in the Palatini formulation for Higgs inflation. The crucial difference of our model from the Palatini formulation for Higgs inflation is that there is a light Weyl gauge field coupled to the Higgs fields. We also generalize the unitarization of Higgs inflation with general covariant kinetic terms for the dilaton and the Higgs fields, and realize a successful Higgs inflation, interpolating between the Palatini formulation for Higgs inflation and a Higgs-like inflation. We also discuss the Higgs mechanism for the light Weyl gauge field with an extra singlet scalar and show some interesting signatures for Higgs physics.

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