



## Nonrelativistic general covariant theory of gravity with a running constant $\lambda$

<http://www.firstlight.cn> 2010-11-30

In this paper, we investigate three important issues: ghost, stability and strong coupling, in the Horava-Melby-Thompson (HMT) setup of the Horava-Lifshitz (HL) theory with  $\lambda \neq 1$ . We first develop the general linear scalar perturbations of the Friedmann-Robertson-Walker universe with arbitrary spatial curvature, and then apply them to the case of the Minkowski background. We find that it is stable and the spin-0 graviton is eliminated. As a result, the strong coupling problem found in previous versions of the HL theory does not present here. We also study the ghost problem, and find explicitly the ghost-free conditions, which are identical to the ones obtained in the Sotiriou, Visser and Weinfurtner (SVW) setup with projectability condition. The vector and tensor perturbations are the same as presented previously in the SVW setup, in which the vector perturbations vanish identically. This implies that the gravitonal sector in the HMT setup is completely described by the spin-2 massless graviton.

[存档文本](#)