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Weak lensing signals induced from second-order vector perturbation

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The standard cosmological perturbation theory is well established by a number of observations such as the CMB anisotropy or the Large scales structure.

The standard cosmological perturbation theory includes three independent modes, i.e., scalar, vector, and tensor modes.

The scalar mode is the dominant component in our Universe and has been well determined by cosmological observations.

Conversely, the vector mode is neglected in the standard first-order cosmological perturbation theory since it only has a decaying mode.

This situation changes if the cosmological perturbation theory is expanded up to second order.

The second-order vector and tensor modes are inevitably induced by the product of the first-order scalar modes.

We study the effect of the second-order vector mode on the weak lensing curl- and B-modes.

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