

Extension of scalar-tensor theories and spatially covariant gravity

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In order to explain the accelerated expansion of our universe in its early stage and today, the most popular approach is to introduce a scalar field to drive the inflation or to act as dark energy. This is the so-called scalar-tensor theory of gravity. In this talk, we first review the development of the scalar-tensor theories with higher derivatives in the recent years. Then we introduce the idea of constructing gravity theories respecting only the spatial symmetry, which propagate a single scalar degree of freedom and thus correspond to even larger class of healthy scalar-tensor theories with higher derivatives. Finally we discuss the propagation of gravitational waves in our framework.

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