

# Seminar

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## Gravity in mimetic scalar-tensor theories

Analyzing linear perturbations around a flat FLRW background we calculate the effective gravitational constant felt by ordinary (non-mimetic) matter. By restricting to a minimally coupled model, such an effective gravitational constant is equivalent to that obtained within General Relativity, with cold dark matter plus a perfect fluid dark energy component, with vanishing sound speed.

By performing a full Hamiltonian analysis we show that a necessary condition for a stable mimetic theory is a positive definite mimetic energy density  $\lambda$ . We show that for mimetic dark matter possessing a shift symmetry the mimetic energy remains positive in time, provided appropriate boundary conditions are imposed on its initial value. For linear perturbations around a flat FLRW background we observe a tachyon/ghost-like instability. The unstable modes are non-propagating (have zero sound speed) and cause the growth of dust matter overdensities.

**Thursday, 10.01.2019, 14:15 Uhr**

**Ort: D6-135**