

# Dark energy with the help of interacting dark sectors

*Monday 7 April 2025 10:50 (20 minutes)*

We analyze theories that do not have a de Sitter vacuum and cannot lead to slow-roll quintessence, but which nevertheless support a transient era of accelerated cosmological expansion due to interactions between a scalar  $\phi$  and either a hidden sector thermal bath, which evolves as dark radiation, or an extremely light component of dark matter. We show that simple models can explain the present-day dark energy of the Universe consistently with current observations. This is possible both when  $\phi$ 's potential has a hilltop form and when it has a steep exponential runaway, as might naturally arise from string theory. We also discuss a related theory of multifield quintessence, in which  $\phi$  is coupled to a sector that sources a subdominant component of dark energy, which overcomes many of the challenges of slow-roll quintessence.

**Authors:** GOMES, Joaquim (University of Liverpool); HARDY, Edward; PARAMESWARAN, Sussha Louise (University of Liverpool)

**Presenter:** GOMES, Joaquim (University of Liverpool)

**Session Classification:** Contributed talks

**Track Classification:** UK Cosmo