

Crossing the phantom divide

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The Dark Energy Spectrometer Instrument second data release has strengthened indications of evolving dark energy, possibly including the violation of the null energy condition $\rho > -p$. It is suggested that the dark energy equation of state evolved from $w < -1$ to $w > -1$, known as crossing the phantom divide. I will discuss challenges to constructing theoretical models realizing this scenario, focusing on “ghost condensation,” in which higher-derivative terms in the action play an essential role. We find that the simplest such theory can provide a reasonable fit to the $w(z)$ evolution that best fits the DESI + CMB + Union3 data sets.

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