

# Future evolution in a backreaction model and the analogous scalar field cosmology

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**Abstract.** We investigate the future evolution of the universe using the Buchert framework for averaged backreaction in the context of a two-domain partition of the universe. We show that this approach allows for the possibility of the global acceleration vanishing at a finite future time, provided that none of the subdomains accelerate individually. The model at large scales is analogously described in terms of a homogeneous scalar field emerging with a potential that is fixed and free from phenomenological parametrization. The dynamics of this scalar field is explored in the analogous FLRW cosmology. We use observational data from Type Ia Supernovae, Baryon Acoustic Oscillations, and Cosmic Microwave Background to constrain the parameters of the model for a viable cosmology, providing the corresponding likelihood contours.

**Keywords:** cosmology of theories beyond the SM, dark energy theory











































