

Abstract Submitted
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Can we avoid dark energy? JIM ZIBIN — The last decade has seen the consolidation of evidence that the expansion of the Universe is accelerating. The source for this acceleration is still a mystery, although most explanations employ some form of dark energy or modified gravity. An alternative approach, which has attracted considerable attention recently, is the idea that we live near the centre of a large, non-linear underdensity or *void*. I show that an appropriate void profile can fit both the latest cosmic microwave background and supernova data without dark energy. However, this requires either a fine-tuned primordial spectrum or a Hubble rate so low as to rule these models out. I also show that measurements of the radial baryon acoustic scale can provide very strong constraints, and discuss the ability of the matter power spectrum to constrain these models. These results have the more general application of testing the validity of the Cosmological Principle.

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