Cornell University Library

We gratefully acknowledge support from the Simons Foundation and member institutions

arXiv.org > gr-qc > arXiv:1202.4228

Search or Article-id (Help | Advanced search) All papers Go!

General Relativity and Quantum Cosmology

Holographic Dark Energy Characterized by the Total Comoving Horizon and Insights to Cosmological Constant and Coincidence Problem

Zhuo-Peng Huang, Yue-Liang Wu

(Submitted on 20 Feb 2012 (v1), last revised 3 May 2012 (this version, v3))

The observed acceleration of the present universe is shown to be well explained by the holographic dark energy characterized by the total comoving horizon of the universe (ηHDE). It is of interest to notice that the very large primordial part of the comoving horizon generated by the inflation of early universe makes the ηHDE behave like a cosmological constant. As a consequence, both the fine-tuning problem and the coincidence problem can reasonably be understood with the inflationary universe and holographical principle. We present a systematic analysis and obtain a consistent cosmological constraint on the ηHDE model based on the recent cosmological observations. It is found that the ηHDE model gives the best-fit result $\Omega_{m0}=0.270$ ($\Omega_{de0}=0.730$) and the minimal $\chi^2_{min}=542.915$ which is compatible with $\chi^2_{\Lambda {\rm CDM}}=542.919$ for the ΛCDM model.

Comments:	17 pages, 4 figures, two eqs. (26)(27) added for the consistent approximate solution of dark energy in early universe, references added, published version in PRD
Subjects:	**General Relativity and Quantum Cosmology (gr-qc)**; Cosmology and Extragalactic Astrophysics (astro-ph.CO); High Energy Physics - Theory (hep-th)
Cite as:	**arXiv:1202.4228 [gr-qc]**
	(or **arXiv:1202.4228v3 [gr-qc]** for this version)

Submission history

From: Yue-Liang Wu [view email]
[v1] Mon, 20 Feb 2012 05:13:11 GMT (213kb)
[v2] Tue, 21 Feb 2012 04:54:47 GMT (213kb)
[v3] Thu, 3 May 2012 01:57:38 GMT (214kb)

Download:

- PDF
- PostScript
- Other formats

Current browse context:
gr-qc
< prev | next >
new | recent | 1202

Change to browse by:
astro-ph
astro-ph.CO
hep-th

References & Citations
- INSPIRE HEP (refers to | cited by)
- NASA ADS

Bookmark(what is this?)

Which authors of this paper are endorsers?

Link back to: arXiv, form interface, contact.