General Relativity and Quantum Cosmology

Expanding universes in the conformal frame of $f(R)$ gravity

John Miritzis, Roberto Giambò

(Submitted on 9 Jan 2010)

The late time evolution of Friedmann-Robertson-Walker (FRW) models with a perfect fluid matter source is studied in the conformal frame of $f(R)$ gravity. We assume that the corresponding scalar field, nonminimally coupled to matter, has an arbitrary non-negative potential function $V(\phi)$. We prove that equilibria corresponding to non-negative local minima for V are asymptotically stable. We investigate all cases where one of the matter components eventually dominates. The results are valid for a large class of non-negative potentials without any particular assumptions about the behavior of the potential at infinity. In particular for a nondegenerate minimum of the potential with zero critical value we show that if γ, the parameter of the equation of state is larger than one, then there is a transfer of energy from the fluid to the scalar field and the later eventually dominates.

Comments: Talk given in "The Invisible Universe", June 29 - July 3, 2009, Paris
Subjects: **General Relativity and Quantum Cosmology (gr-qc)**
Cite as: **arXiv:1001.1437v1 [gr-qc]**

Submission history

From: Jonn Miritzis [view email]
[v1] Sat, 9 Jan 2010 19:11:29 GMT (8kb)

Which authors of this paper are endorsers?

Link back to: arXiv, form interface, contact.

Download:

- **PostScript**
- **PDF**
- **Other formats**

Current browse context:

gr-qc
< prev | next >
new | recent | 1001

References & Citations

- SLAC-SPIRES HEP
  (refers to | cited by)
- CiteBase

Bookmark(what is this?)

| CiteULike logo |
| Connotea logo |
| BibSonomy logo |
| Mendeley logo |
| Facebook logo |
| del.icio.us logo |
| Digg logo | Reddit logo |