2005 Vol.44 No.5 pp.948-954 DOI:

Crossing w=-1 in Gauss-Bonnet Brane World with Induced Gravity

CAI Rong-Gen,[1] ZHANG Hong-Sheng,[1] and WANG An-Zhong[2]

[1] Institute of Theoretical Physics, the Chinese Academy of Sciences, P.O. Box 2735, Beijing 100080, China
[2] CASPER, Department of Physics, Baylor University, 101 Bagby Avenue, Waco, TX 76706, USA
(Received: 2005-5-20; Revised:)

Abstract: Recent type Ia supernovas data seemingly favor a dark energy model whose equation of state w(z) crosses -1 very recently, which is a much more amazing problem than the acceleration of the universe. In this paper we show that it is possible to realize such a crossing without introducing any phantom component in a Gauss-Bonnet brane world with induced gravity, where a four-dimensional curvature scalar on the brane and a five-dimensional Gauss-Bonnet term in the bulk are present. In this realization, the Gauss-Bonnet term and the mass parameter in the bulk play a crucial role.

PACS: 98.80.-k, 04.50.+h
Key words: dark energy, brane world scenario, phantom divide

[Full text: PDF]

Close