

# Robertson-Walker Cosmological Equations Within the Framework of the Kaluza-Klein Theory in the Absence of the Cylindricity Condition. Dark Energy Model

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## Abstract

The Robertson-Walker cosmological equation is generalized for the case of a flat world within the framework of the Kaluza-Klein theory in the absence of the cylindricity condition, which posits the hypothesis of a physical structure of the fifth dimension that can serve as a test object. The dependences of the Hubble parameter and the red shift parameter on the perturbation of the fifth dimension have been obtained here for the first time. A model of dark energy is proposed which treats it as the dynamic quintessence in the presence of a reactive potential, where the latter is the source of its effect upon gravitation. © 2014 Springer Science+Business Media New York.

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## Keywords

dark energy, fifth coordinate, gravitation, Hubble law, reactive potential, red shift, variable mass