

# Constraints on Chameleon Dark Energy Model from SN Ia and BAO Observations

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## Abstract

A scalar field is known as chameleon when there is a non-minimal coupling between the scalar field and the matter. Such a chameleon field not only can be heavy enough in the laboratory tests so that the local gravity constraints are fulfilled but also it can be light enough at cosmological scales and considered as a dark energy candidate. In this paper we have used the latest observational data to constrain the parameters of the tachyonic chameleon model of dark energy. Two important functions in our analysis are tachyonic potential  $V(\phi)$  and non-minimal coupling function  $f(\phi)$  between the scalar field and matter. In general we have considered two types of these functions i.e power-law and exponential forms. We have fitted data from Type Ia supernova (SN Ia) and Baryon Acoustic oscillation (BAO) to obtain constraints on the present matter density parameter  $\Omega_{m_0}$  and the free parameters in the functional form of  $f(\phi)$  and  $V(\phi)$ .

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