U11a **Observational constraints of a cosmological model with a variable equation of state**

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We have constructed a model with variable equation for matter and dark energy from the observations of Type Ia Supernovae. We focus on how the evolving Equation Of State (EOS) for matter and dark energy (DE) can modify the standard cold dark matter paradigm. This was focused on the most challenging problem in cosmology is to explain the observed present accelerated expansion of the universe. Variable equation of state came to an account when we search the possible candidates to explain the late time accelerated expansion of the universe.

Here we focus on a variable equation of state and parametrization of Dark energy which can accommodate a number of dark energy models, including a cosmological constant. Here we focus on evolution of the universe and its late time cosmic accelerated expansion. We investigate the contribution of the variable equation of state of dark matter and dark energy to modify the ΛCDM paradigm. The type Ia Supernovae (SNIa), union 2 compilation are used in the redshift range $0.01 < z < 2$ to constrain the model at the late time acceleration of the universe. We constrain the parameters which are inherent in the model from the SNIa observations. We could identify at the low redshift range, present model and ΛCDM model are indistinguishable. However the present model theoretically behaves differently from ΛCDM in the high redshift range. It concludes the present model is effective candidate to trace the evolution of the universe.