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**Dependency of the cosmographic tension of standard model to statistical errors of observational data**

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### Abstract

In this work, we study the standard model of cosmology in the context of cosmographic approach. We want to determine whether the cosmographic tension of the standard model that is reported in recent studies, depends on the statistical errors of the observational data or not. To do this, we produce three catalogues of mock data for the distance modulus of type Ia supernovae using a canonical value for matter density in the framework of standard model. In the first catalogue, the errors of mock data have been chosen equal to the errors of real data in Pantheon catalogue. In the second and third catalogues, the errors of mock data have been chosen equal to half and twice the real errors in Pantheon sample, respectively. In the next step, using the generated mock data, we minimize the least square function in the context of Markov Chain Monte Carlo method and put constraints on the cosmographic parameters in both model independent cosmographic approach and standard model. Our results show that decreasing the error of mock data can remove the cosmographic tension of the standard model. Also, the larger errors increase the deviation of standard model from cosmographic method. Hence, the cosmographic tension of the standard model which is recently reported by the Hubble diagrams of quasars and Gamma-Ray-Burst can be essentially due to large error bars of these observational data and so not a physical tension.

**Keywords:** the standard model of cosmology, cosmographic method, type Ia supernovae

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