

Abstract Submitted
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Sample variance in the local measurements of the Hubble constant HAO-YI WU, Ohio State Univ - Columbus, DRAGAN HUTERER, University of Michigan — The current $> 3\sigma$ tension of the Hubble constant H_0 is one of the most highly debated issues in cosmology. While local distance ladder indicates $H_0^{\text{loc}} \approx 73 \text{ km s}^{-1}\text{Mpc}^{-1}$, cosmic microwave background points to $H_0^{\text{CMB}} \approx 67 \text{ km s}^{-1}\text{Mpc}^{-1}$. We explore to which extent this tension can be alleviated by the sample variance in the local measurements. Using large-volume cosmological simulations and taking into account the inhomogeneous selection of type Ia supernovae, we find $\sigma(H_0^{\text{loc}}) = 0.31 \text{ km s}^{-1}\text{Mpc}^{-1}$, which is too small to account for the current tension of $6 \text{ km s}^{-1}\text{Mpc}^{-1}$. To explain the current tension would require an underdense region of 150 Mpc with $\delta \approx -0.8$, which is highly unlikely in a Λ CDM universe and also violates existing observational constraints.

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