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The Warmness of Dark Matter from the Lyman alpha forest

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We reconsider the problem of determining the warmness of dark matter from the Lyman-alpha forest. In particular, we have re-analyzed the previous work of Viel et al 2013, based on high resolution Lyman-alpha forest spectra. We allow different cosmic thermal history than the one considered in the previous work; these cosmic thermal history are in agreement with other theoretical and observational constraints at higher redshift. We obtain new constraints on the warm dark matter (WDM) mass, $m_{\text{WDM}} \geq 2.13 \text{ keV}$ at 2-sigma level. We conclude that, due to astrophysical uncertainties, the likelihood function considered in Viel et al cannot improve the constraints on WDM mass with respect to previous constraints from SDSS.

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