

NEW MODEL-INDEPENDENT METHOD TO TEST THE CURVATURE OF THE UNIVERSE

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We propose a new model-independent method to test the cosmic curvature by comparing the proper distance and transverse comoving distance. This method is based on the difference between the proper distance and comoving angular diameter distance. Using the measurements of the Hubble parameter $H(z)$ one can derive the function of the proper distance with redshift by using the Gaussian Process method. And then comparing with the comoving angular diameter distance derived from the angular diameter distance d_A , the cosmic curvature parameter Ω_K is constrained to be -0.09 ± 0.19 , which is consistent with a flat universe. We also use a Monte Carlo simulation to test the validity and efficiency, and find that our method can give a reliable and efficient constraint on cosmic curvature. Compared with other model-independent methods testing the cosmic curvature, our method can avoid some drawbacks and give a better constraint.