A Figure of Merit Analysis of Current Constraints on Testing General Relativity using the Latest Cosmological Data Sets JASON DOSSETT, Department of Physics, The University of Texas at Dallas, JACOB MOLDENHAUER, Department of Physics and Astronomy, Francis Marion University, MUSTAPHA ISHAK, Department of Physics, The University of Texas at Dallas — Currently, much attention is going into testing general relativity to see if cosmic acceleration is due to dark energy or a modification to gravity at cosmological scales. An increasingly popular approach to this problem is parameterizing modifications to the growth equations in general relativity, particularly the Poisson's equation and the ratio between the two metric potentials in the perturbed FLRW metric. We compare some of the various modified growth (MG) parameterizations that have been proposed in recent literature. Next we place constraints on the MG parameters using current cosmological data. A Figure of Merit approach is then used to study and compare the constraining power of various combinations of data sets on the MG parameters. We find that adding up current data sets does not consistently improve the uncertainties on MG parameters due to tensions between the best-fit MG parameters preferred by different data sets. Finally, for all the parameterizations used, we find that the values corresponding to general relativity are within the 95% confidence level contours for all data set combinations.

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