Abstract Submitted
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Exploring the Nature of Dark Energy GILBERT RIVERA, PAUL WALTER, St. Edward's University — After physicists found out that our Universe was accelerating in its expansion, we have all wanted an explanation. The culprit is believed to be dark energy, which is responsible for the observed acceleration we see today. Cosmological parameters from the various models of the Universe actually provide us insight into the nature of dark energy. Constraining these different parameters help describe the evolution of the Universe. The different cosmological and astrophysical observations, i.e., CMB, HST, type Ia supernovae, BAO, etc., provide data about given parameters and are useful to help determine the relative contributions to the current energy density of the Universe. Cosmologists use CosmoMC, a Fortran 2008 fast Markov Chain Monte-Carlo (MCMC) machine that utilizes MCMC techniques to examine cosmological parameter space. The data from all the sources of cosmological observations are uploaded into CosmoMC and place constraints on the values of energy densities and other parameters in the ΛCDM model. We were able to produce plots that show the best fit values for cosmological parameters using the 2015 Planck Mission data. We would like to continue using CosmoMC to ultimately provide insight into the nature of dark energy.

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