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Constraining Dark Energy and Curvature Parameters with Observations of Supernovae, Cmb Radiation, and Baryon Acoustic Oscillations[1] ALVARO JOSEPH HU[2], University of Dallas — In 1998, the universe was discovered to be expanding at an accelerating rate, contrary to the assertion that its expansion was slowing down at the time. This acceleration can be accounted for by adding a Λ term to Einstein's field equation. The common belief among cosmologists is that this Λ, or as it is also known, the cosmological constant, is associated with a dark energy component of the universe that contributes to the repulsion of the massive structures in the universe. Although current models of the universe operate under the assumption that Λ is constant, there are some in the field that are working at determining whether or not this is in fact true. In a model with a varying dark energy, the current dark energy is given as w while the red-shift dependent dark energy is w_a. Using cosmological data, including Supernovae data sets PANStarrs, JLA, and Union, and pairing them with different values for the Hubble constant, we are able to achieve constraints for w, w_a, and Ω_k. We use explore these dark energy models using CosmoMC for parameter fitting and CosmoEJS for visualization of the fit and expansion history of the models.

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