Abstract

In this thesis, we used three different probes i.e. Supernovae data, BAO data and H(z) data to constrain a number of spatially flat and non-flat models. From different combinations of data sets, different constraints have been obtained for the different models we consider. We can conclude that the joint analysis of data gives tighter constraints compared to the individual analysis of data sets. We can also infer that more data and more precise data is required to tightly pin down the spatial curvature of the Universe in dynamical dark energy models. One of the key features is that we used the particle physics scalar field models to determine the equation of state w and then constrain its value with the observations. This is important because we can use the established models of particle physics to constrain the parameters in cosmology. One can put observational constraints on various cosmology models. We consider only cannonical scalar field model. Using same technique, we can put constrains on various scalar field models. Thus, observations play significant role in determining the viable cosmology. We also consider the dark energy models with space curvature with constant equation of state. It would be of significant interest to determine the constraints on space curvature in the non-flat model from CMB anisotropy measurements. Such an analysis, possibly in combination with that of other data of the kind considered here could go a long way towards establishing whether space curvature contributes significantly to the current cosmological energy budget. The analysis can be extended to other cosmologies with scalar field models like k-essence, tachyon etc. We will analyse other potential forms in scalar field models determine the constraints on space curvature in the non-flat model from CMB anisotropy measurements.