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Redshift, the treasure of modern cosmology

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Current paradigm in modern cosmology is the pursuit to understand the hidden mystery behind the words 'dark energy' and 'dark matter'. As we all have heard, great problems require great tools and tremendous resources. The current state of the art data driven era of cosmology is the result of a series of growing galaxy surveys in the recent past (SDSS, 6dF, 2dF, VIPERS, GAMA, CFHTLS etc.), ongoing surveys (SDSS-IV, KIDS, HSC, DES) and those planned in the future (DESI, EUCLID, LSST, WFIRST). These surveys provide progressively better data in terms of both quantity and quality. In this discussion I will focus on the surveys which measure the redshift of galaxies, called galaxy redshift surveys. I will summarize how galaxy redshift surveys, like BOSS and eBOSS, have performed and what is going to happen in the next generation redshift surveys like DESI. Then I will move on to show some of the recent results using data from BOSS, focusing on the aspects I most worry about. I will end with describing the current results from various surveys and the big questions of the future efforts.