Abstract
Selecting Guide Stars for the Dark Energy Survey DECam
Elba M Sepulveda

The Naval Observatory Merged Astrometric Dataset (NOMAD) catalog presents difficulties in the information of magnitudes of the stars in some areas of the southern sky. This catalog was used to get guide stars for the Dark Energy Survey Camera (DECam), an array of digital chips called charge-coupled devices (CCDs), used for converting light into electrons. After hitting each pixel in a chip, they are converted into digital values for storing in a computer in the form of an image. A further analysis of the NOMAD catalog was made to find good guide stars for the starfinder application. The DECam Survey Image System as defined in the Process Integration (SISPI) needs a compilation of files to manage DES interfaces and to guide the system.

For this research, a photometric system is used to program DECam. It was made by selecting stars for defining the standard-star system using u'g'r'i'z' as the basis of the calibration of the Sloan Digital Sky Survey. Most of them will be used in the Dark Energy Survey (DES). It is possible to calculate useful estimates of stellar magnitudes for the guiding program for DECam. A comparison of the u'g'r'i'z' photometric system with UBVRI from NOMAD Catalog were made using computer assisted database search (CADS). It included Python and R programming to analyze data. Strong correlations between BVJ and magnitudes were found. As a result, DES can estimate magnitudes from the good data in NOMAD and avoid using the problematic R band data in the southern hemisphere.