

Calibration and Standardization of Large Surveys and Missions in Astronomy and Astrophysics



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Calibration strategy for the SkyMapper Survey

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SkyMapper is a survey of the sky south of the equator in 6 bands, u,v,g,r,i,z. SkyMapper's griz bands are similar to those of SDSS while the u band is similar to Stroemgren u, and the v band is similar to DDO 38. It will be conducted over 5 years commencing in late 2012. The first year will concentrate on a shallow coverage (g=8 to 18 mag) of the whole area in photometric weather to provide standard photometry for the deep survey. The system will be calibrated to the AB photometric system using a grid of 9 new STIS spectrophotometric standards, six placed at 4 hour intervals in RA, one circumpolar star and two equatorial stars. We will also obtain new STIS spectrophotometry for 6 northern secondary SDSU standards, to tie the northern and southern surveys together. The spectrophotometric precision will aim to be within 1%, similar to the best of the Calspec fundamental calibrators. The spectrophotometry will be conducted in collaboration with Bohlin, Deustua, Heap and colleagues to ensure that the high precision requirement is achieved.

Summary

New STIS spectrophotometry, to better than 1%, will be obtained for 15 stars to calibrate the northern and southern surveys. Our goal is to tie photometry in both hemisphere to an absolute spectrophotometric system - This would serve the basis of SkyMapper's photometric system, and is the basis of the calibrations necessary to undertake supernova cosmology experiment to a high degree of precision. Currently, uncertainties in the overall calibration of SN to the fundamental standards is the largest single source of systematic uncertainty in the SN experiments. These data would be used for current SNLS/SDSSII work, as well as SkyMapper, and DECCAM, and eventually LSST calibration.

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