
Atmospheric Extinction for Single band astronomical survey

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There are increasing number of optical sky surveys for time-series observations, aiming to discover either photometric variations(variable stars, microlensing, or transients) or astrometric variations(near-earth objects, trans-neptunian objects). Some surveys, including YSTAR, use a single filter in order to increase the survey efficiency. However, the traditional method of atmospheric extinction and standardization requires the measurement of source color in at least two passbands. Therefore a cautious approach is necessary for single band observations in order to preserve the photometric accuracy. Through numerical simulations as well as preliminary analysis of YSTAR standard star observations, we have studied the significance of the problem and the possibility of minimizing systematic errors in atmospheric extinction correction for single band observations.