

Abstract Submitted
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An Atmospheric Transmission Monitoring Camera for Dark Energy Survey TING LI, Texas A&M Univ — Traditional color and airmass corrections can typically achieve 0.02 mag precision in photometric observing conditions. A major limiting factor is the variability in atmospheric throughput, which changes on timescales of less than a night. We have built an Atmospheric Transmission Monitoring Camera (aTmCam), which consists of four telescopes and detectors each with a narrow-band filter that monitors the brightness of suitable standard stars. Each narrowband filter is selected to monitor a different wavelength region of the atmospheric transmission, including regions dominated by the precipitable water vapor and aerosol optical depth. The colors of the stars are measured by this multi narrow-band imager system simultaneously. The measured colors can be used to derive the atmospheric transmission of a site. We installed such system at the Cerro Tololo Inter-American Observatory and it started autonomous observation every night since Sept 2014. We derive hourly atmospheric transmission model from the observation; these atmospheric transmission model will be used to improve photometric precision of Dark Energy Survey and achieve 0.01 mag photometric precision.

Ting Li
Texas A&M Univ

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