Preliminary Calibration of the Photometrics PXL1300L CCD Camera

Abstract

This report describes the preliminary spectroradiometric calibration of a CCD camera system, which consists of a high dynamic range (12 bit), liquid cooled scientific grade CCD camera used in conjunction with a series of narrow band and neutral density filters. The purpose of the calibration is to extend the camera system into a *spectral camera*, capable of measuring scene images that would provide, not only color information, but *quantitative spectrum data* for every pixel of a viewed scene. The measured images from such a *spectral camera* can eventually be compared with the synthetic images generated using physically based algorithms for illumination exchange.

The present report provides spectral transmittance curves for the narrow band and neutral density filters used with the CCD camera, and the results of various linearity checks on the camera. The report provides the *spectral response function* for the camera and *preliminary spectral reconstructions* for wide and narrow band light sources.