

**A CO-ORDINATED GROUND-BASED STUDY
OF
THE EXTRAGALACTIC BACKGROUND LIGHT
AT OPTICAL WAVELENGTHS**

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ABSTRACT

We present the first results of an on-going study of the optical properties of the extragalactic background light as measured by ground-based telescopes equipped with panoramic CCD detectors. We demonstrate the feasibility and effectiveness of a newly devised method for identifying and completely subtracting out the largest single contaminating source of light in this experiment, the terrestrial airglow. The method takes advantage of two properties of the earth's atmosphere: (1) for the airglow we confirm that there is no wavelength dependence in the slope of the airglow intensity *increase* with increased airmass (the slope in this case being a purely geometric term depending only on the total line of sight), while (2) for starlight traversing the same line of sight the extinction coefficient is dependent on wavelength, but moreover the apparent luminosities of the stars are anticorrelated with the strength of the airglow. By observing the same field at a number of different airmasses it is possible to use the a priori knowledge that the stars are in fact constant (but apparently) fading with increased airmass in order to measure and scale out the airglow, which is increasing with increased airmass (but at a different rate and with the opposite sign).