

Abstract Submitted
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Spectroscopic Distance Measurements of Atmospheric Continuum Light Sources (e. g. Marfa lights) SAGAR GHIMIRE, KARL STEPHAN, Texas State University Dept. of Technology — Our research is based on data we collected during a 20-night investigation of a phenomenon known as “Marfa lights” using a Schmidt-Cassegrain telescope and a CCD-array spectrometer. Although no objects we sighted met all the criteria of “true” Marfa lights, we collected spectra of headlights at different locations, some of which could have been false positives for a light of unknown origin. Spectroscopic analysis of the visible oxygen absorption band near 13121 per cm (760 nm) was used to estimate distances to headlights, which emit a continuum spectrum. Comparisons of spectroscopic distance data with independent geographical information system (GIS) distance data shows that distance estimates obtained with spectroscopy agree within +/- 1.4 KM or better for distances greater than 4 KM. The technique adopted involves computation of the experimental transmittance function and the expected transmission function for the 760 nm band. The RMS error between these two transmission functions is computed over various distances, and the minimum-error distance gives us the best estimate of the actual distance.

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