عنوان مقاله:

Applications of ۲-D Moiré Deflectometry to Atmospheric Turbulence

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خلاصه مقاله:

We report on applications of a moiré deflectometry to observations of anisotropy in the statistical properties of atmospheric turbulence. Specifically, combining the use of a telescope with moiré deflectometry allows enhanced sensitivity to fluctuations in the wave-front phase, which reflect fluctuations in the fluid density. Such phase fluctuations in the aperture of the telescope are imaged on the first grating of the moiré deflectometer, giving high spatial resolution. In particular, we have measured the covariance of the angle of arrival (AA) between pairs of points displaced spatially on the telescope aperture which allows a quantitative measure of anisotropy in the atmospheric surface layer. Importantly, the telescope-based moiré deflectometry measures directly in the spatial domain and, besides being a non-intrusive method for studying turbulent flows, has the advantage of being relatively simple and inexpensive.

کلمات کلیدی:

Boundary layers turbulence, Electromagnetic waves atmospheric propagation, Turbulence atmospheric, Diffraction gratings optical, Interferometers