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Simulating atmospheric turbulence with random phase screens

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Abstract content
   (Max 300 words)

Numerical simulations can be used to study various aspects of optical beam propagation through atmospheric turbulence. In most numerical simulations, the atmosphere is simulated with random phase screens based on the Kolmogorov theory of turbulence. However, the different sizes of atmospheric eddies make it difficult to capture all the statistical properties of the turbulent atmosphere with such phase screens. Furthermore, the fact that one uses the Fast Fourier Transform (FFT) algorithm in the generation of these phase screens introduce some numerical artefact in the final results In this work, we present traditional methods used to simulate atmospheric turbulence for beam propagation. Problems associated with these methods are discussed and possible solutions to those problems are resented. We also discuss an alternative method to generate the random phase screens and we present graphs of the structure function showing that the new method is in agreement with the Kolmogorov theory of turbulence.

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PhD

Main supervisor (name and email)
and his / her institution

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Would you like to <br> submit a short paper <br> for the Conference
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No

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