



Contribution ID: 192

Type: **Poster Presentation**

Analysis of aberrations generated in aerodynamic random media using computational fluid dynamics

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Media generated by random mixing of hot and cold gases can be of great importance for laser beam propagation. However, it is not always possible to represent the media's behaviour using simple formulation. This opens the door for the use of numerical methods. We show that, for aerodynamic media, we can use computational fluid dynamics (CFD) software to acquire density distribution data to characterize both local and overall behaviour of the media. Using the Gladstone-Dale law, we acquired refractive index distribution which we use to calculate Zernike coefficients from the respective local phase values at various sections of the media. We show that once we have this data, we can simulate the propagation of laser beams of various shapes in such media. We apply the method to analyse a spinning pipe gas lens (SPGL) which is a horizontal pipe whose walls are heated rotated along its axis. We show that the results from the model agree with the SPGL experimental results.

Level (Hons, MSc, PhD, other)?

PhD

Consider for a student award (Yes / No)?

Yes

**Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?**

Yes

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