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Type: **Oral Presentation**

## The mean focal length of an aberrated lens

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We outline an approach for the calculation of the mean focal length of an aberrated lens, and provide closed form solutions that show that the focal length of the lens is dependent on the presence of defocus, x-astigmatism and spherical aberration. The results are applicable to Gaussian beams in the presence of arbitrary sized apertures. The theoretical results are confirmed experimentally, showing excellent agreement. As the final results are in algebraic form, the theory may readily be applied in the laboratory if the aberration coefficients of the lens are known.

**Level (Hons, MSc, &nbsp; PhD, other)?**

PhD

**Consider for a student &nbsp; award (Yes / No)?**

Yes

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

Yes

**Primary author:** Mr MAFUSIRE, Cosmas (CSIR National Laser Centre)

**Co-author:** Prof. FORBES, Andrew (CSIR National Laser Centre)

**Presenter:** Mr MAFUSIRE, Cosmas (CSIR National Laser Centre)

**Session Classification:** LOS

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