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The Wigner distribution function in characterising general optical fields of varying coherence

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The coherence of optical fields is a defining factor in how they are represented and characterised, in this work we employ the Wigner Distribution Function (WDF) for a generalized optical field characterisation method. We characterize a Gaussian-Schell model partially coherent beam by determining the beam width, divergence, curvature and beam quality factor of the pure field from the mutual correlation function and its corresponding WDF. The beam is digitally encoded using an SLM. The WDF is a space-frequency representation and in the spatial domain, we find comparable accuracy between the parameters obtained using the pure optical field and the WDF.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

Msc

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

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CSIR National Laser Centre

Would you like to
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No

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