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## The Wigner distribution function in modal characterisation

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**Abstract content** (Max 300 words) **Formatting & Special chars**

We investigate a novel approach to characterise an optical field employing a Wigner distribution function with a modal decomposition technique. Optical fields are typically characterised through their phase, beam size, far field beam divergence, beam quality and constituent modal components where a variety of measurement techniques are required to obtain the above parameters. These techniques include a modal decomposition that uses a superposition of orthogonal functions to determine constituent modal components and a knife-edge method to determine beam size by the use of a scanning slit and a detector. The use of the Wigner distribution function together with the modal decomposition is an approach to optimally obtain the various beam parameters in a single set of measurements. We demonstrate a mathematical representation of the approach and highlight the experimental procedure in modal characterisation.

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

No

**Please indicate whether this abstract may be published online (Yes / No)**

No

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