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## Azimuthal Decomposition of Optical Modes

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### Abstract content <br> (Max 300 words)

We outline a simple approach, using only digital holograms, to perform an azimuthal decomposition of optical modes carrying orbital angular momentum. The decomposition is executed by obtaining the inner product of the incoming mode with a predetermined match filter, which is programmed as a digital hologram. We demonstrate the success of this technique by decomposing a mode which consists of a superposition of two orbital angular momentum carrying Bessel beams, having an arbitrary phase delay between them. From our measurements we are able to reconstruct the spatial distribution, phase and orbital angular momentum density of the initial mode. The ability to decompose modes (especially those carrying orbital angular momentum) is relevant in both classical and quantum optics, as well as the field of mode multiplexing for optical communication.

### Apply to be<br> consider for a student <br> award (Yes / No)?

No

### Level for award<br>(Hons, MSc, <br> PhD)?

None

### Main supervisor (name and email)<br>and his / her institution

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

No

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