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## **Exploiting the spatial profiles of light**

A. Dudley; C. Rosales-Guzmán; A. Trichilli; A. Forbes

### **ABSTRACT:**

**We implement digital holograms for the creation and detection of the spatial modes of light. We make use of modal decomposition theory to determine the numerous properties of light, from the modal content of laser beams to decoding the information stored in optical fields carrying orbital angular momentum. We demonstrate the versatility of these techniques to characterize both structured and vector fields with static and propagating optical fields. Finally, we show a holographic technique to realise a communication link using a densely packed spatial mode set where we experimentally multiplex and de-multiplex over 100 spatial modes.**