High-speed spatial control of the intensity, phase and polarization of vector beams using a digital micro-mirror device

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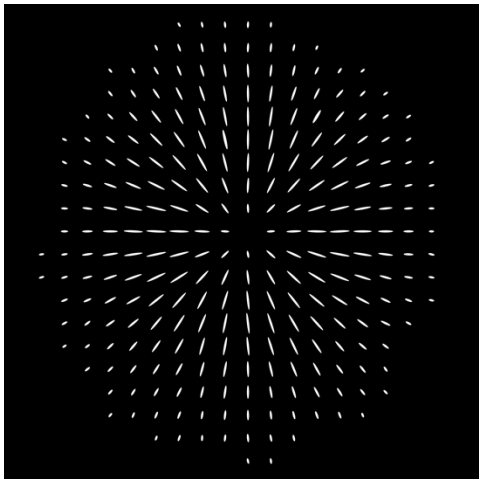
Measurements

The Stokes measurements found in figures 3,4,5 and 6, e.g.



were generated by first taking 7 CCD images of the different polarisation domains by using a linear polariser and quarter wave plate (QWP) when applicable:

1.bmp
Measurement 1: Raw Beam [No linear polariser; no QWP]
This measurement was used as the inset on figures 3, 4, and 5.

2.bmp
Measurement 2: Horizontal position [Linear polariser aligned with beam A; No QWP]

3.bmp
Measurement 3: Vertical position [Linear polariser aligned orthogonal to beam A; No QWP]

4.bmp
Measurement 4: Diagonal [Linear polariser aligned with beam A + 45°; No QWP]

5.bmp
Measurement 5: Anti-Diagonal [Linear polariser aligned with beam A - 45°; No QWP]

6.bmp

Measurement 6: LH Circular [Linear polariser aligned with beam A ; QWP aligned with beam A]

7.bmp
Measurement 7: RH Circular [Linear polariser aligned orthogonal to beam A; QWP aligned orthogonal to beam A]

Next, equations 6, 7 and 8 were used to process the Stokes measurements into

A: Semi-Major Axis length (Pmaj)
B: Semi-Minor Axis length (Pmin)
Theta: orientation of major axis (θ)
H: Handedness (h)

These are also included, their filenames corresponding to the dates they were taken e.g. *x1d110716.txt* was the first measurement on the 11th July 2016.

To generate the polarisation maps, each pixel represented was used to construct an ellipse of specification [A, B, theta and h]

The following is a list of the raw data folders used to create the results of this paper.

Figure 3a	Measured DMD Fourier Plane
Figure 3b	Measured DMD image Plane
Figure 3c	Measured DMD Fourier Plane
Figure 3d	Measured DMD image Plane
Figure 4b	Measured DMD Fourier Plane
Figure 4c	Measured DMD image Plane
Figure 4g	Measured DMD Fourier Plane
Figure 4h	Measured DMD Fourier Plane
Figure 4i	Measured DMD Fourier Plane
Figure 5	Measured DMD Fourier Plane
Figure 6 (Frames 0,2,4,6,8,10,12,14,16,18)	Measured DMD Fourier Plane