

# Arbitrary Mode Generator

## PRODUCT BRIEF

### KEY FEATURES

- Arbitrary spatial mode eg Laguerre-Gaussian, Hermite Gaussian, Orbital Angular Momentum, Bessel
- Arbitrary polarization state - linear, circular, radial, azimuthal, hybrid Automatic fine-alignment and measurement

### POSSIBLE APPLICATIONS

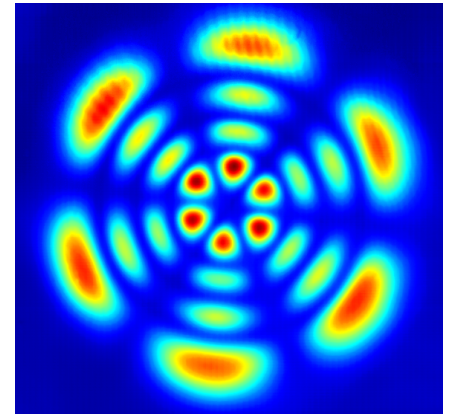
- Beam characterization
- Fiber and waveguide characterization
- Mode Division Multiplexing
- Optical tweezers
- Beam manipulation

### CONTACT

Joel Carpenter  
cudos.at.cleo@physics.usyd.edu.au

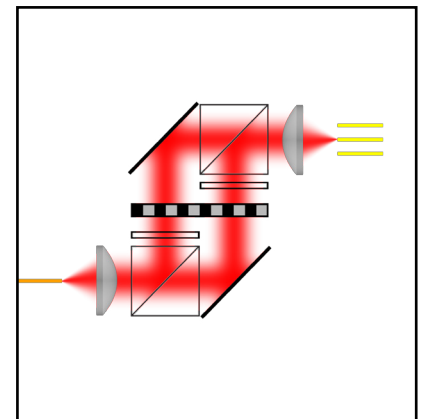
## OVERVIEW

The Arbitrary Mode Generator converts a single-mode fiber input, into a user defined spatial/polarization mode for coupling into multimode fiber, or propagation in free-space. The Arbitrary Mode Generator is based around a liquid crystal-based spatial light modulator which displays computer-generated holograms designed to produce the desired modes. With HD resolution and independent control of both orthogonal polarizations, the family of possible beams and mode types is virtually limitless. The system can be used to both generate arbitrary beams, but also in the reverse propagation direction as a means of analyzing the wavefront of an incoming beam. With this, the arbitrary mode generator is an extremely flexible multimode characterization platform which can generate arbitrary launch conditions at the input to the fiber and evaluate the resulting field at the output of the fiber.



## PRELIMINARY SPECIFICATIONS

Insertion loss	4dB + mode conversion loss (0 to 10dB)
Frame rate	2Hz Wavelength band: 1520-1570nm (other bands available)
Dimensions	260x200x100mm
Weight	2 kg



### PAPER

Joel Carpenter, Benjamin J. Eggleton, and Jochen Schröder, "Maximally efficient imaging through multimode fiber" CLEO 2014, Paper STh1H.3

