

Q1-2016 Newsletter

What's New

Summarizing 2015 – It was an excellent year for the laser based industry and we at HOLO/OR would like to thank our customers and partners for their cooperation and trust in our products and capabilities. We hope that 2016 will shine even brighter for the laser market.

Diffractive Optical Elements (DOEs) with reduced chromatic sensitivity

Chromatic sensitivity is one of the major issues for diffractive optics. At the optimal wavelength all of the input light gets diffracted. When inserting a non-optimal wavelength to the DOE, a fraction of the input energy will pass undiffracted through the DOE and Zero Order (ZO) will arise. Tolerance of $>5\%$ in wavelength typically gives unacceptable results. Many techniques were developed to reduce the ZO, however, by adding another step into the fabrication process and using a specially designed diffractive pattern on a photomask HOLO/OR is able to turn any existing DOE into a semi-achromatic version, reducing the ZO at non-optimal wavelength, and greatly increasing the workable spectral band for DOEs. [Contact us for more information.](#)

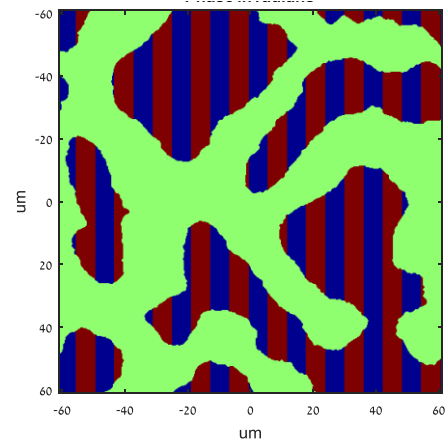


Figure – Phase structure of a 3-level DOE. Each color represent a different height in the substrate.

Upcoming exhibitions

Photonics West 2016 – February 16-18 - San Francisco, California, USA:

Visit us on [Booth #307, South Hall](#)

SPIE. PHOTONICS WEST

LASER World of Photonics 2016 – March 15-17 - Shanghai, China:

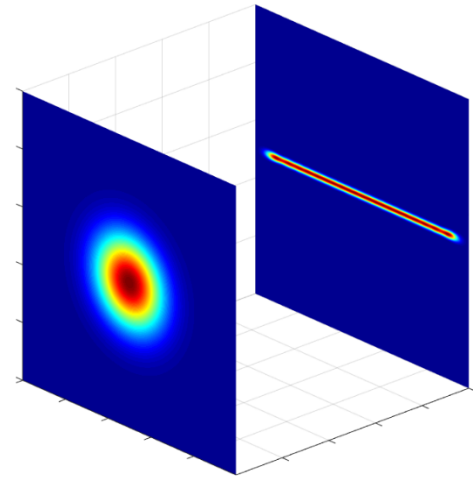
Visit us on [Booth #3109, Hall W3](#)

LASER World of **PHOTONICS CHINA**
MARCH 15-17, 2016 | SHANGHAI NEW INTERNATIONAL EXPO CENTRE

Applications

Line Shaped Diffractive Homogenizers

Utilizing the advantages of diffractive optics, any input beam (SM or MM) can be transformed to a line shape with flat-top intensity profile. Our DOE solution is not sensitive to: input beam size, centration, and Gaussian intensity distribution input. We currently have 17 available designs with small to wide angles ready to be fabricated for any given wavelength. This product type is ideal for material processing (surface treatment, lift-off, etc.) and machine vision applications. A full list of products is available in our [Beam Homogenizer / Optical Diffuser product page](#).



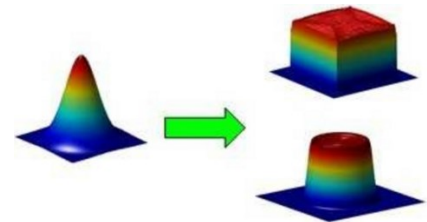
Technical tips

Top-Hat beam shaper Zemax Black Box (ZBB) files

Integrating a Top-Hat (TH) beam shaper is now made easier, with the help of Zemax Black Box files (ZBB) we made for most of our TH products. This turns the design and modeling of an optical system with TH to be straightforward. You can find these in below links:

- 1) [Angular Beam Shaper product page](#)
- 2) [Focal Beam Shaper product page](#)

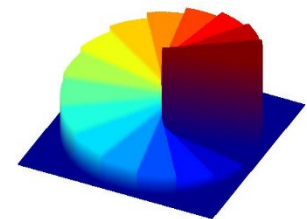
Zemax



Tutorials

Using Vortex Phase Plate (VPP) in Zemax

The Vortex phase plate Diffractive Optical Element can be modeled in ZEMAX. A full set of complex field is presented in the [Vortex Zemax Tutorial](#): Amplitude and Phase. This concept allows to integrate a VPP in multi element optical systems and analyze its functionality.



FAQ

Diffractive Axicon application note

A Diffractive Axicon (DA) transforms a laser beam into a ring shape (approximated Bessel beam intensity profile). Combining a DA and a focus lens produces a line focus along the optical axis and increases the Depth of Focus (DOF). Typical applications for axicons are laser material processing, optical tweezers, and eye surgery. [Read more in the app note](#).

