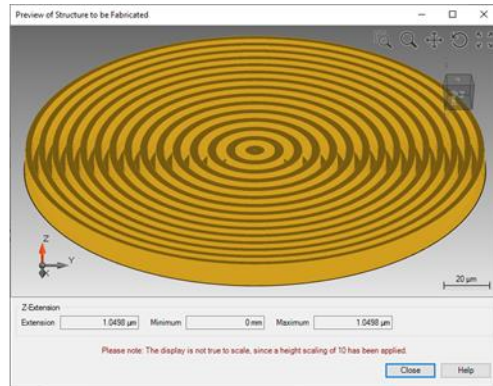
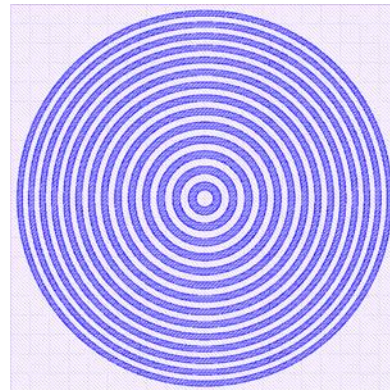


Export of Fabrication Data of a Holographic Optical Element (HOE)

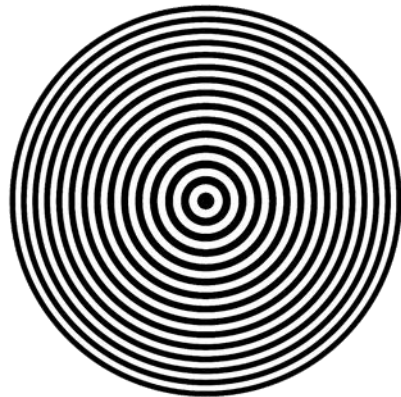
Abstract



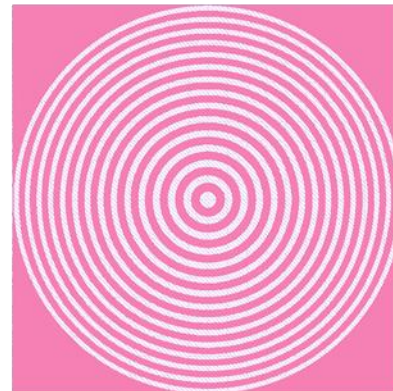
3D view of an HOE in VirtualLab



CIF export of HOE structure
(illustrated by KLayout)



Bitmap export of HOE structure

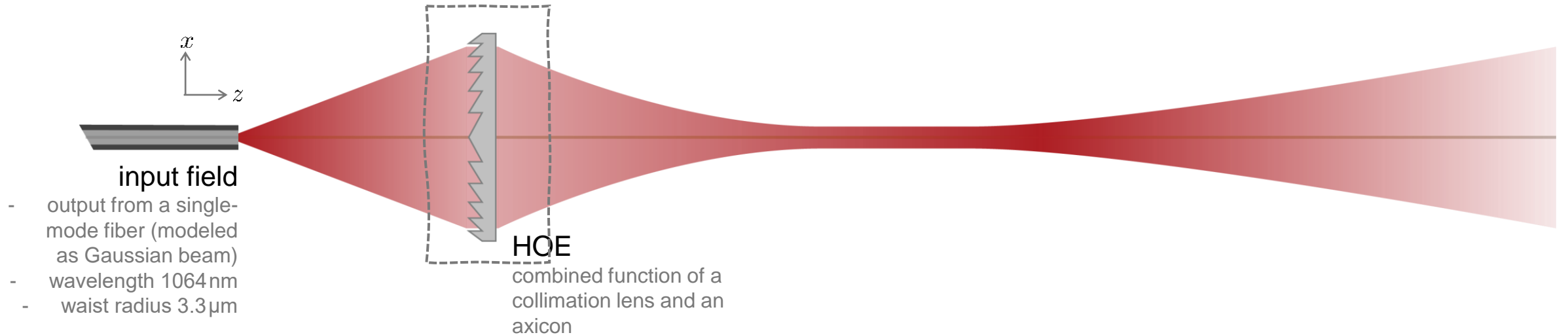



GDSII export of HOE structure
(illustrated by KLayout)

A good synergy between software design tools and the subsequent fabrication of components relies on the capability of the software to provide information about the designed structures which can be easily interpreted in the manufacturing process; in other words, being able to export the structure information in the data format used for fabrication. In this document, we demonstrate how to export the fabrication data of a quantized HOE structure to various data formats. The workflow is illustrated for STL output, widely used for rapid prototyping and 3D printing, and for GDSII, commonly employed in lithographic exposure techniques.

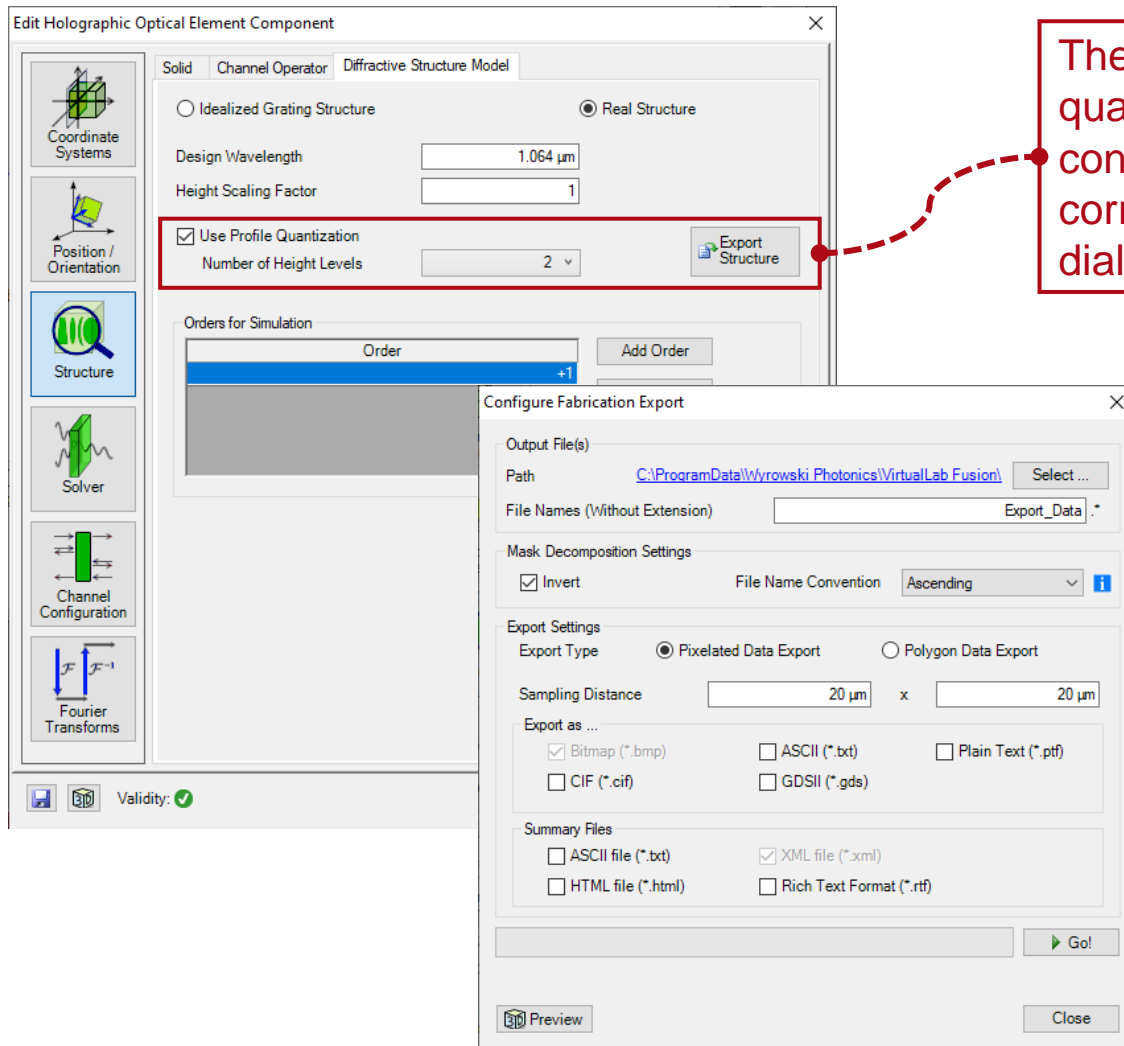
Task Description

How to export the fabrication data of an HOE which has been design to shape a fundamental Gaussian beam into a Bessel beam, with its characteristically long depth of focus?



 [see the full Application Use Case: "Bessel Beam Generation behind a Fiber with a Holographic Optical Element"](#)

Quantized HOE Fabrication Data Export

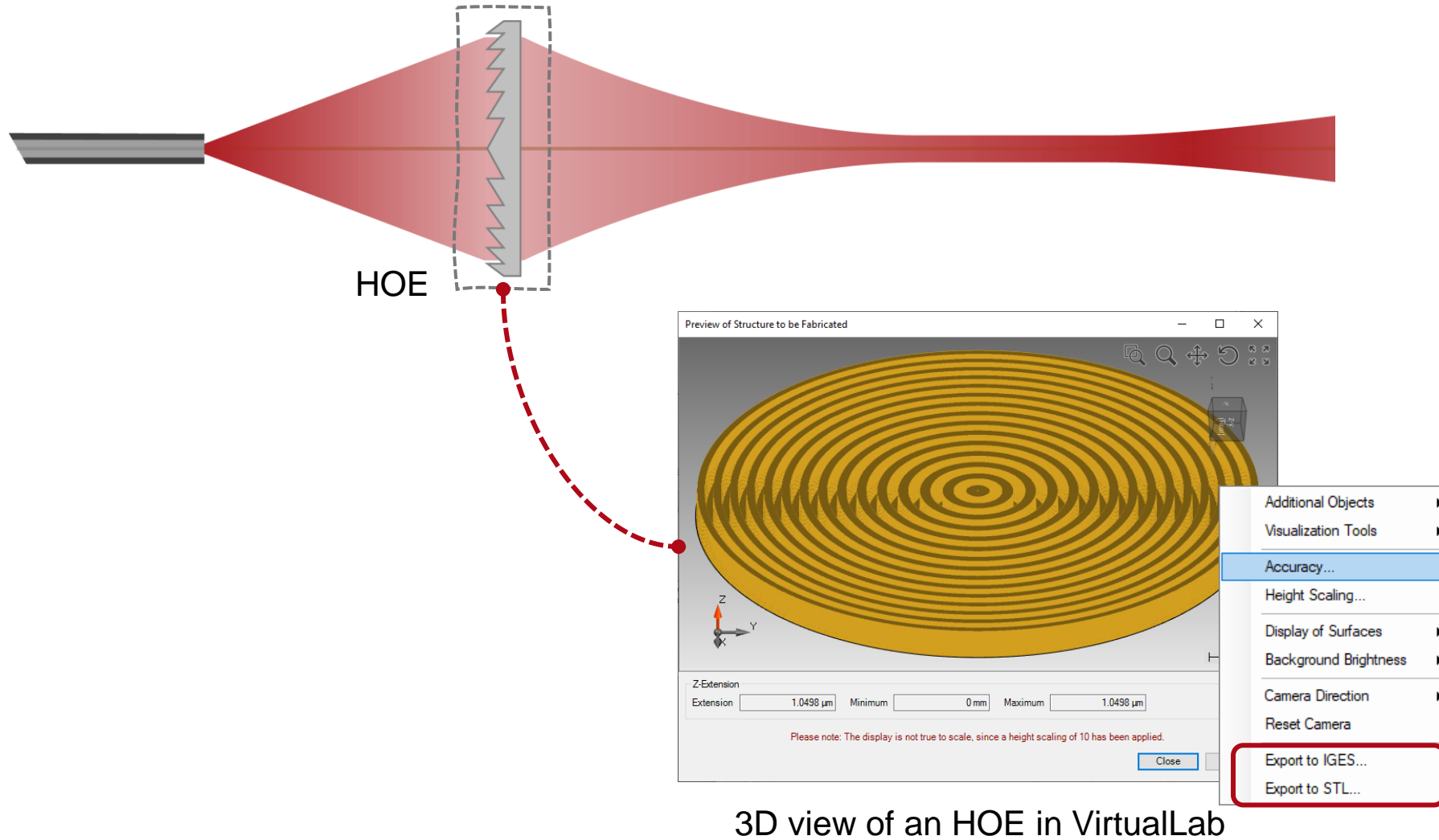


The height levels for the quantization of the structure can be configured through the corresponding controls in the edit dialog of the HOE.

Fabrication export supports specification of

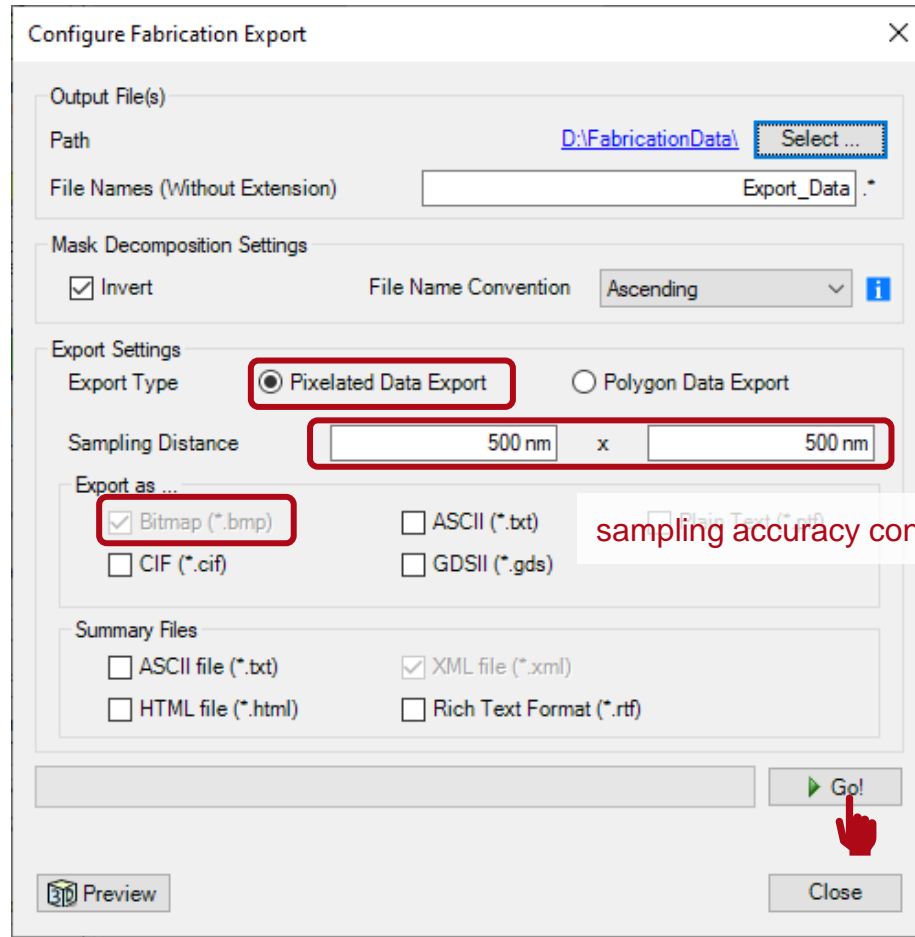
- Target directory
- Parameters for mask decomposition
- Pixelated or polygon data export (+ export accuracy parameters)
- File format (supported formats: bitmap, text files, GDSII or CIF)

HOE Fabrication Data Export – Preview

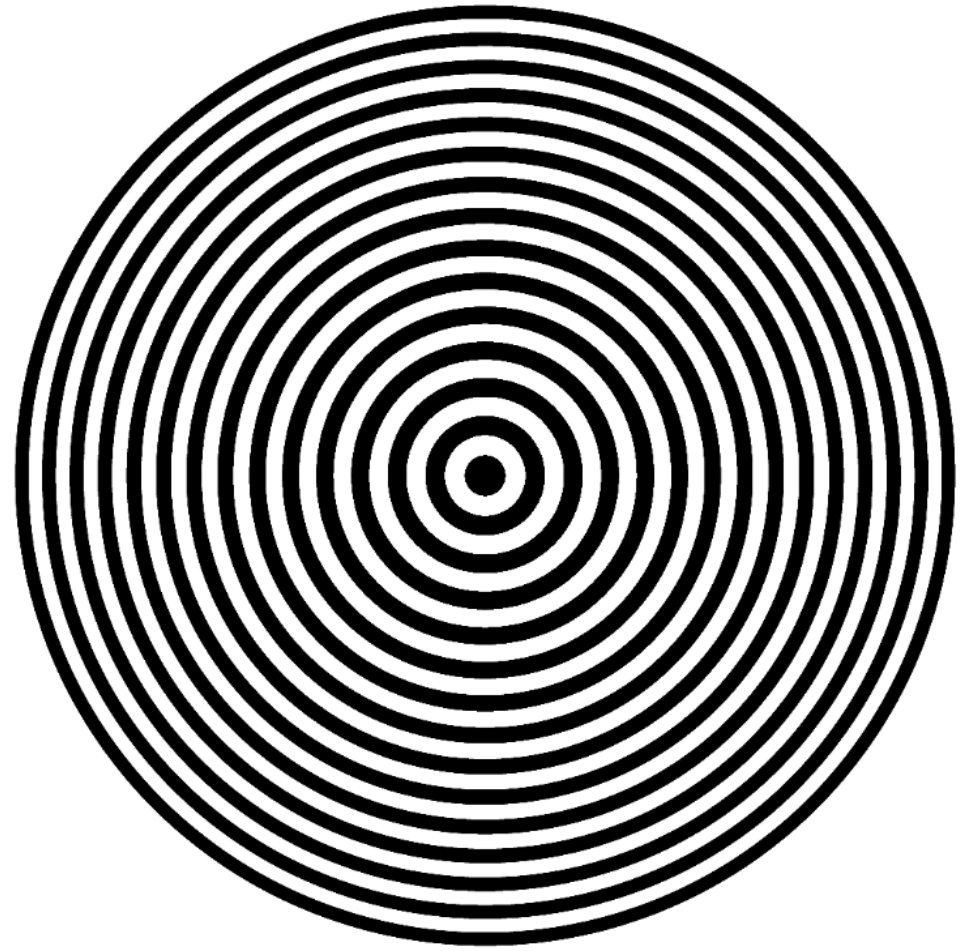


Right click on the 3D view of the structure to see additional options to configure the display. This 3D view is also available for export!

HOE Fabrication Data Export – Sample Data Pixelated Bitmap

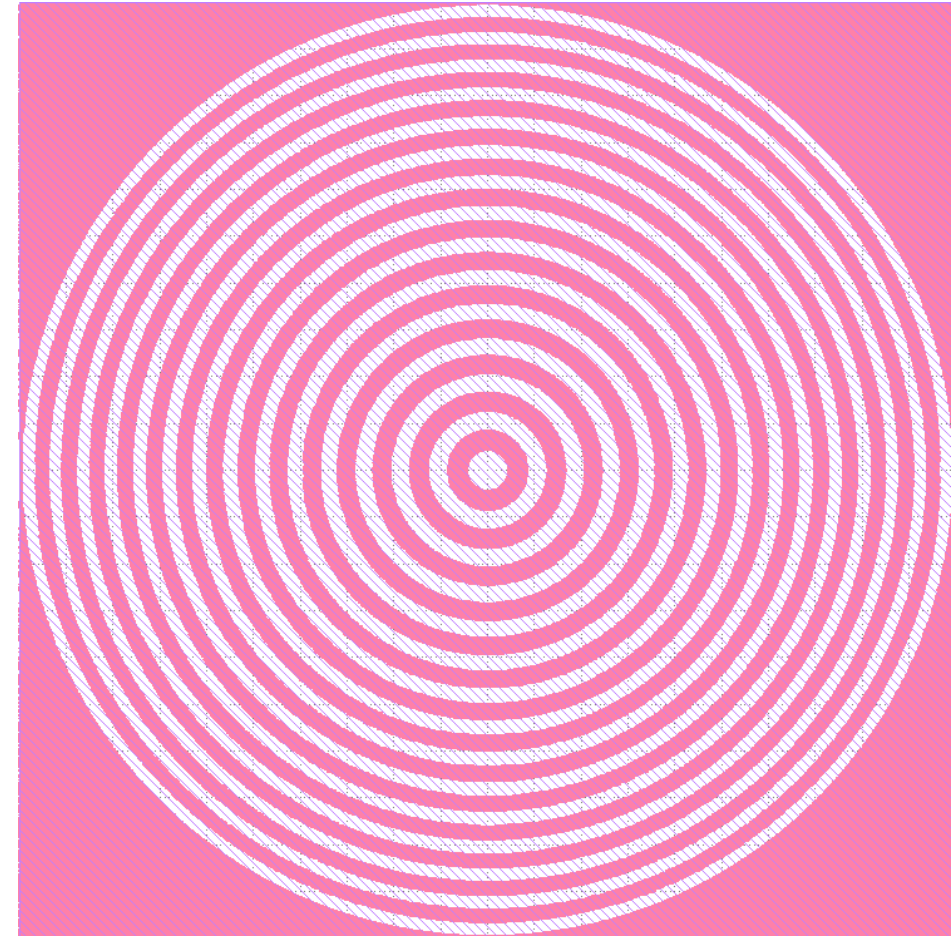
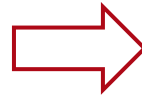
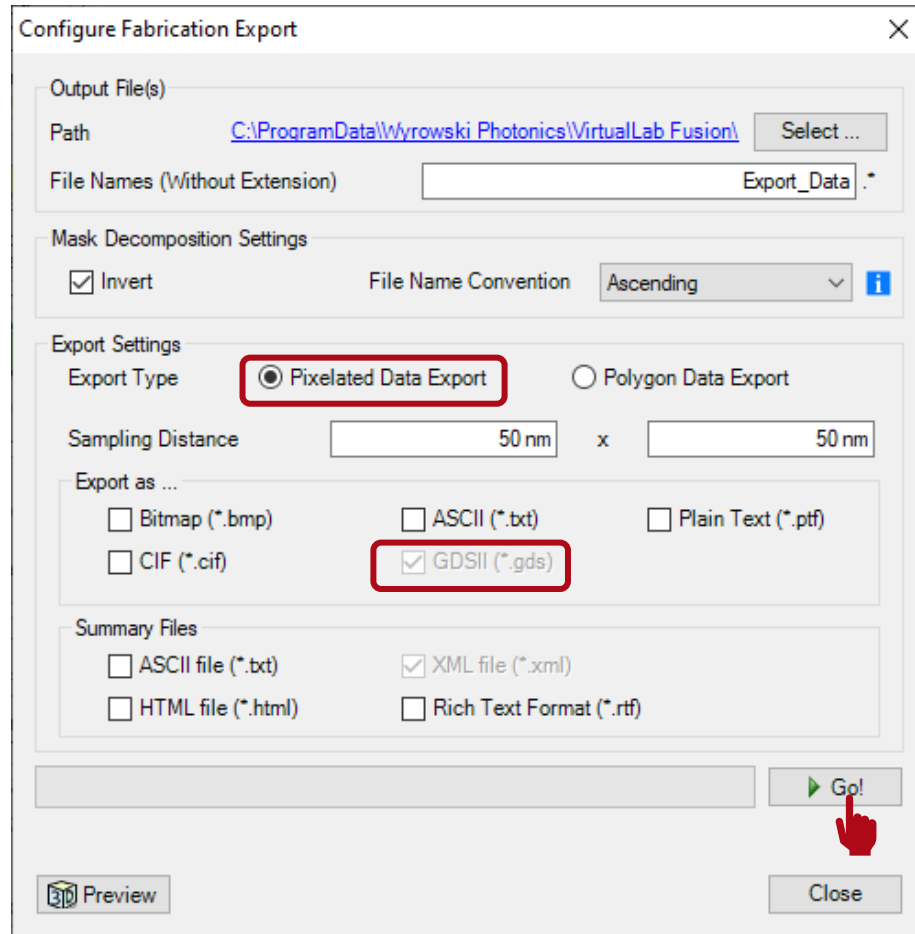


sampling accuracy control



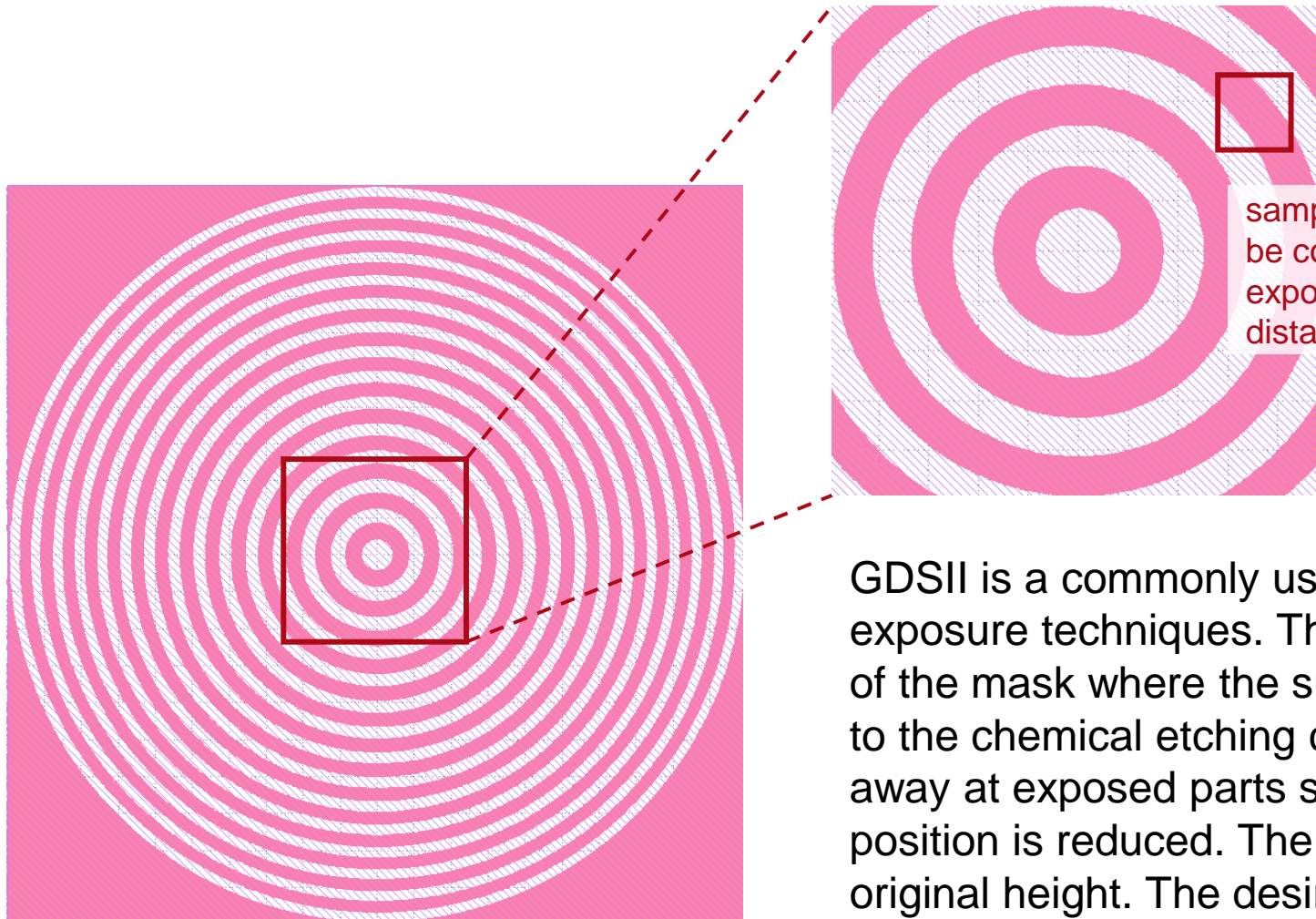
Bitmap export of HOE structure

HOE Fabrication Data Export – Sample Data Pixelated GDSII

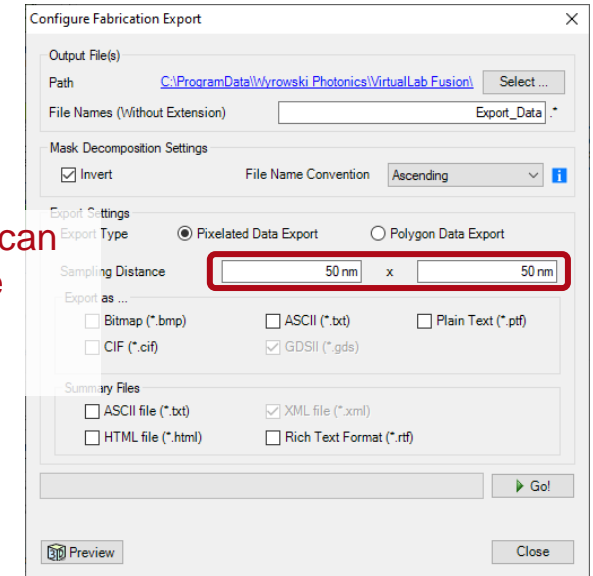


GDSII export of HOE structure
(illustrated by KLayout)

HOE Fabrication Data Export – Sample Data Pixelated GDSII

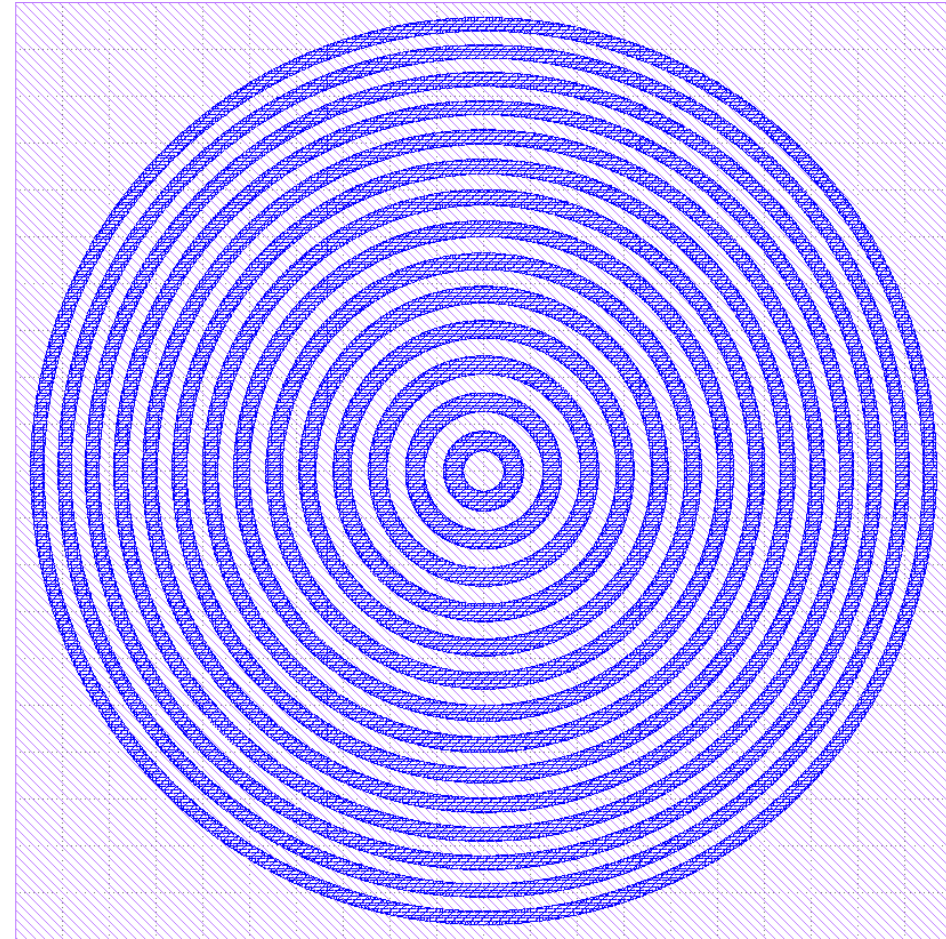
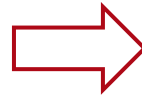
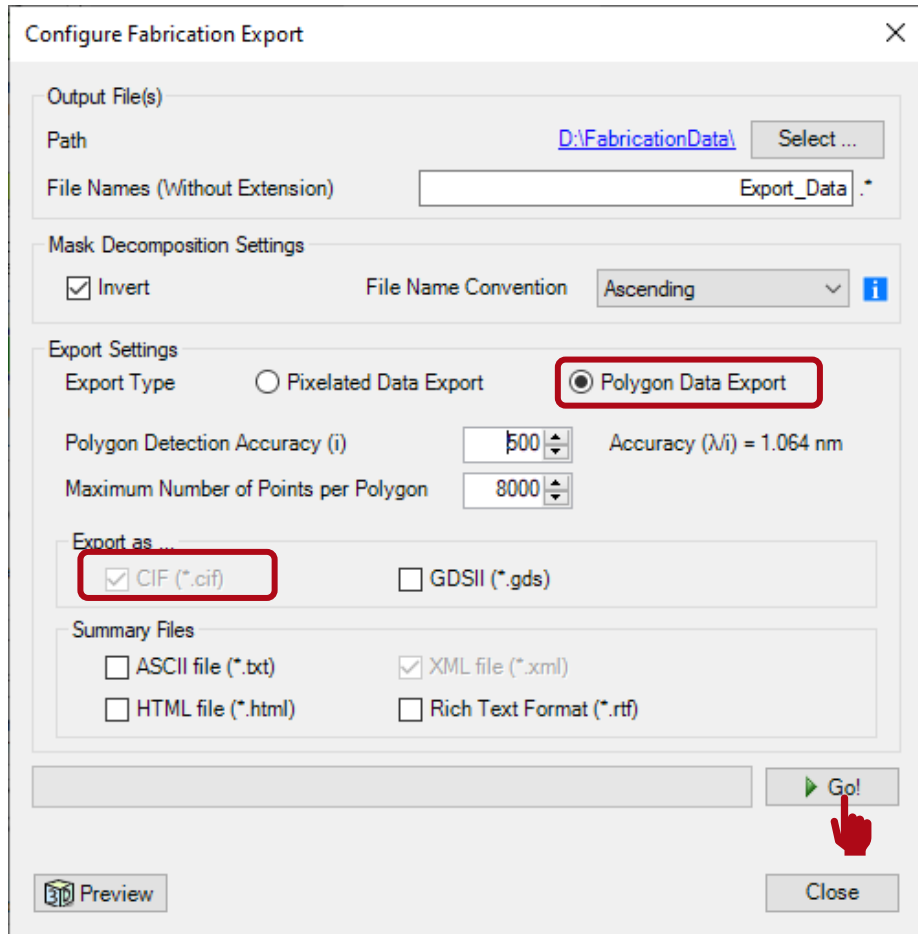


sampling accuracy can be controlled by the export sampling distance



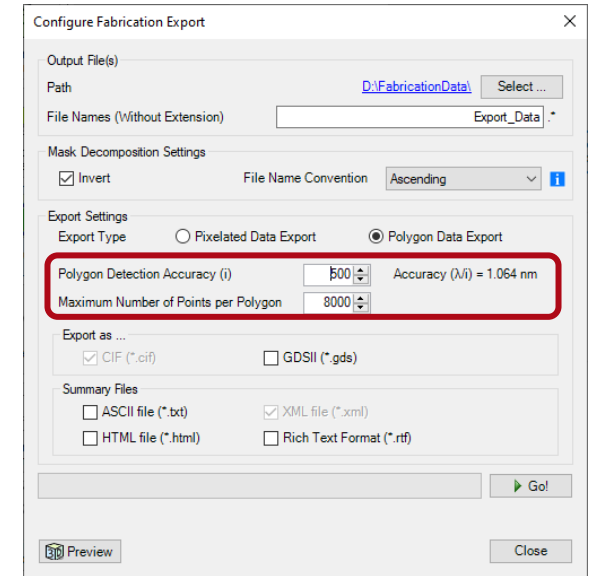
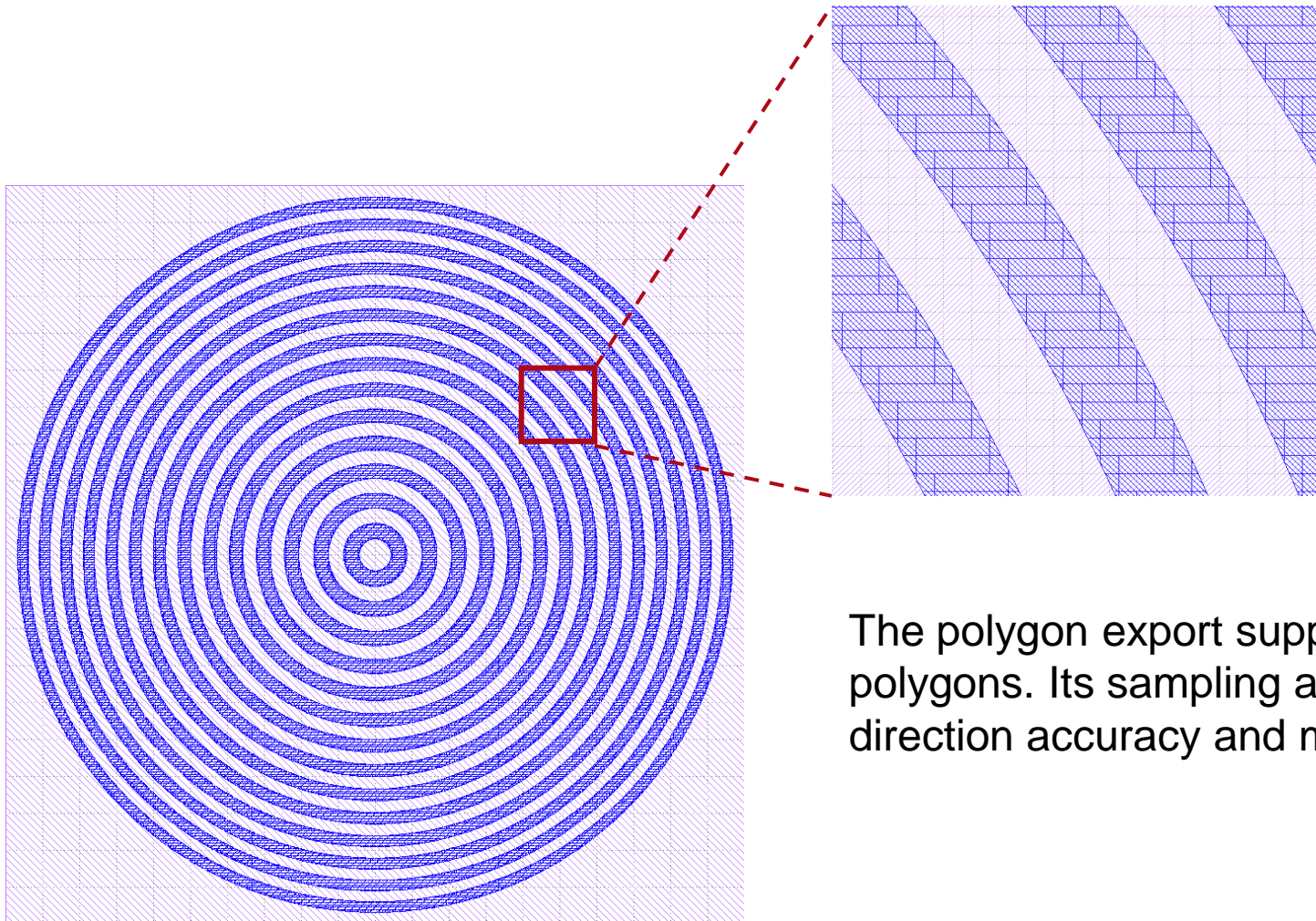
GDSII is a commonly used file format in, e.g., lithographic exposure techniques. The ones and zeros describe the positions of the mask where the substrate will be covered (1) or exposed to the chemical etching compound (0). The chemical will eat away at exposed parts so that the amount of material at that position is reduced. The parts that are covered retain their original height. The desired shape is thus achieved.

HOE Fabrication Data Export – Sample Data Polygon CIF



CIF export of HOE structure
(illustrated by KLayout)

HOE Fabrication Data Export – Sample Data Polygon CIF



The polygon export supports the exportation of arbitrary polygons. Its sampling accuracy is controlled by the polygon direction accuracy and maximum number of points per polygon.

Document Information

title	Export of Fabrication Data of a Holographic Optical Element (HOE)
document code	
version	1.0
edition	VirtualLab Fusion Basic + Diffractive Optics Toolbox Gold
software version	2020.2 (Build 2.22)
category	Feature Use Case
further reading	- <u>Export of Fabrication Data for Smooth Surfaces</u>