Feature.0020

Flexible Region Configuration

A short guide on the generation of regions by using different manners, and their use in different applications, e.g., the diffractive optics merit functions detector.

About This Use Case

- The following toolbox is required
  - Starter toolbox
- This use case is produced with VirtualLab Fusion (Build 7.0.0.35).
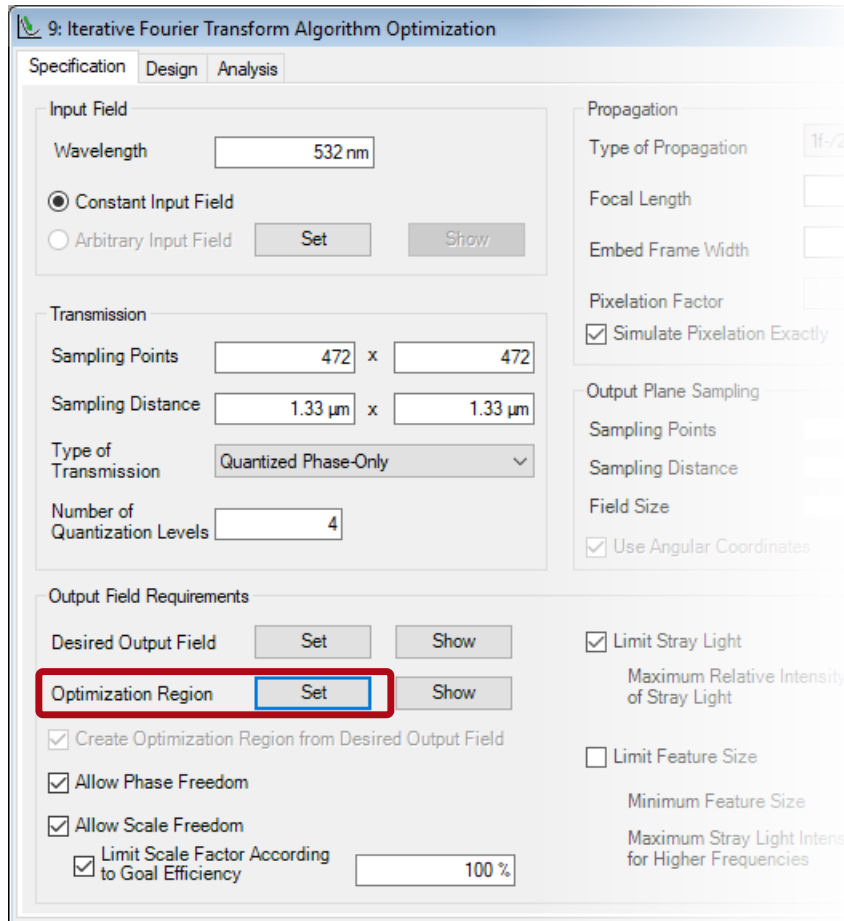- Get your free Trial Version <u>here</u>!

This Use Case Shows ...

- how to generate regions in different manners, and how to use them as signal regions in specific applications.
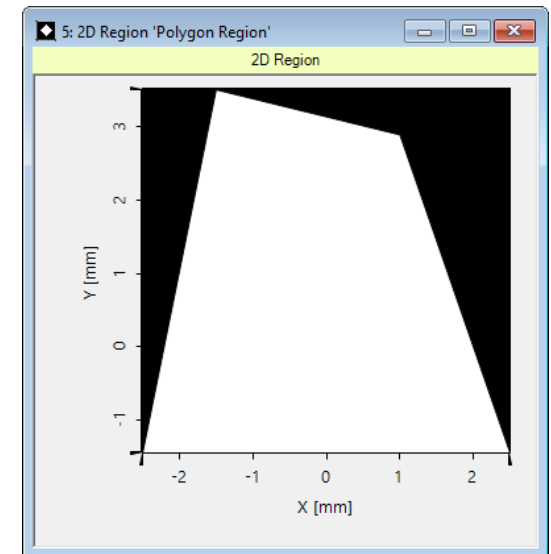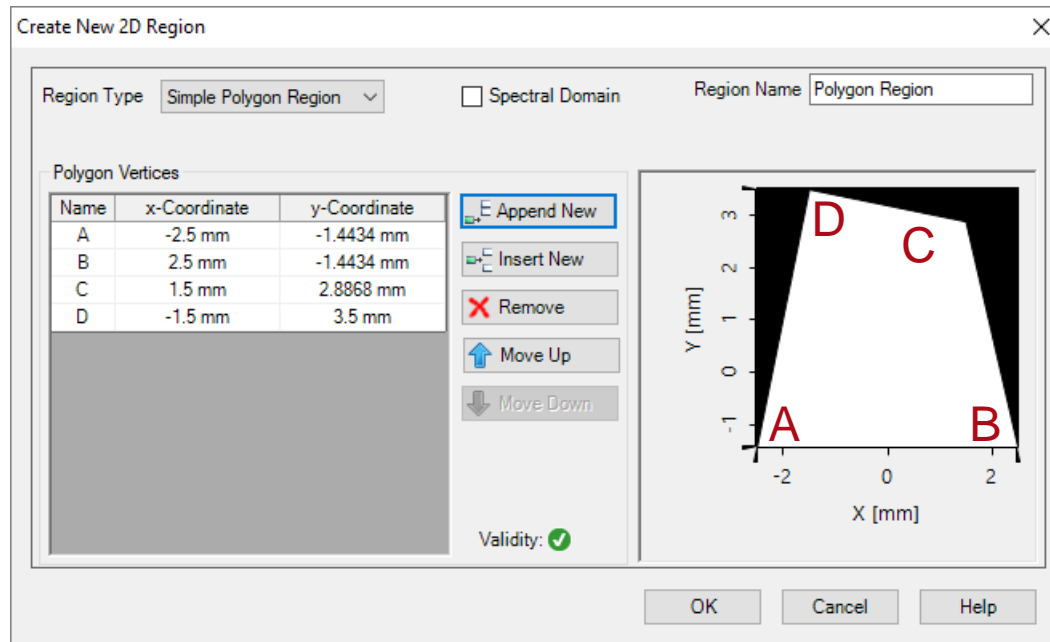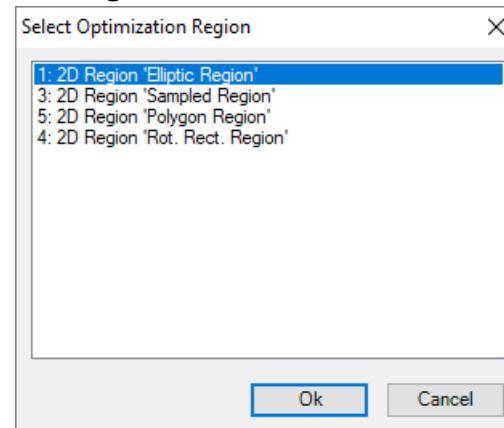
Used as Optimization Region

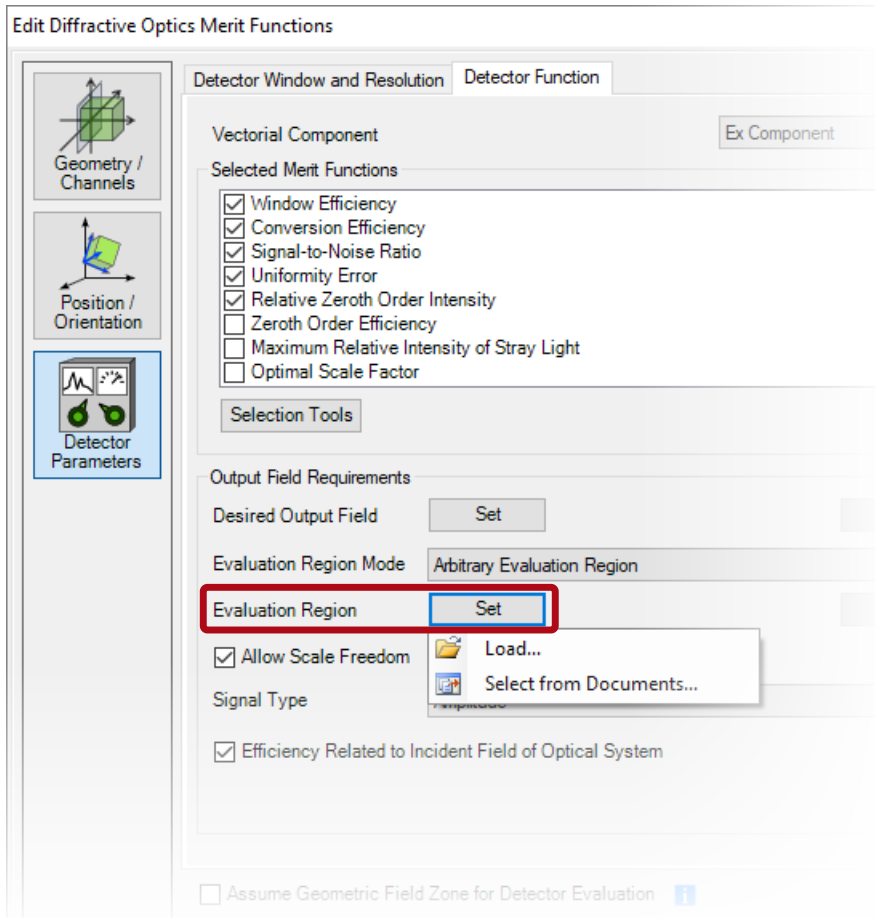- Iterative Fourier transform algorithm (IFTA) optimization

One can select any active region documents as *Optimization Region* for the design.
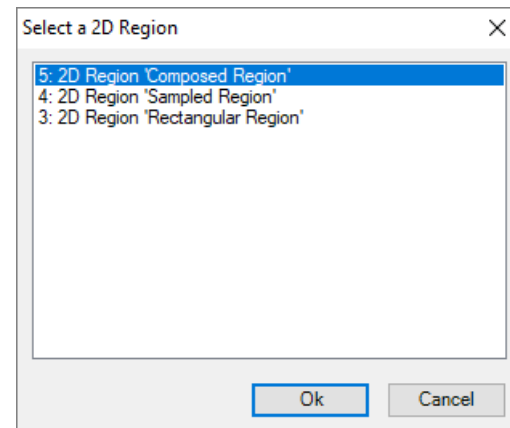
Used as Evaluation Region

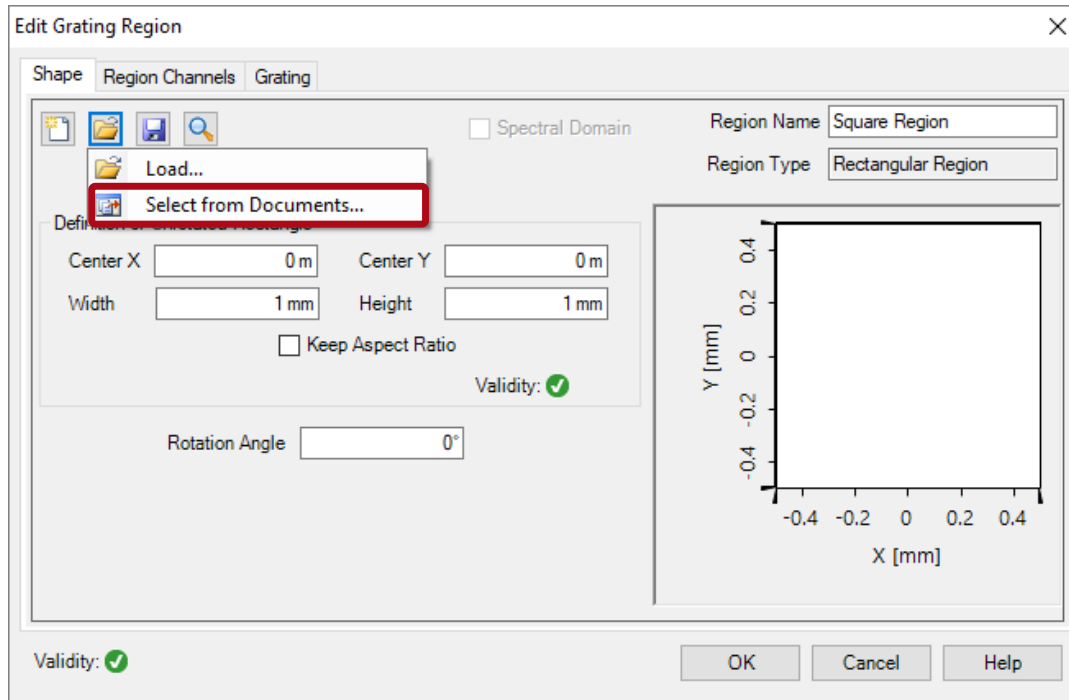- Diffractive optics merit functions detector

One can select any active region documents as *Evaluation Region* for the detector.
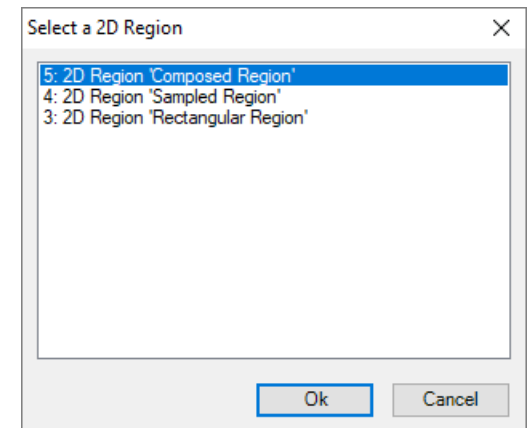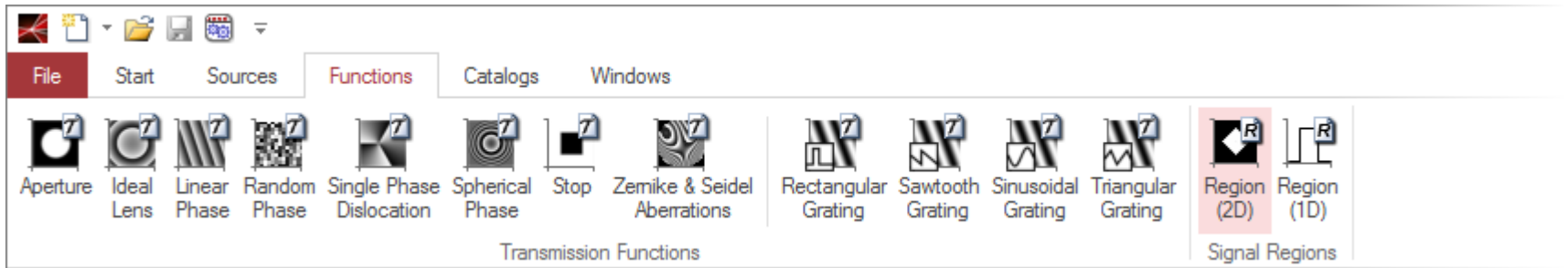
Used as Grating Region

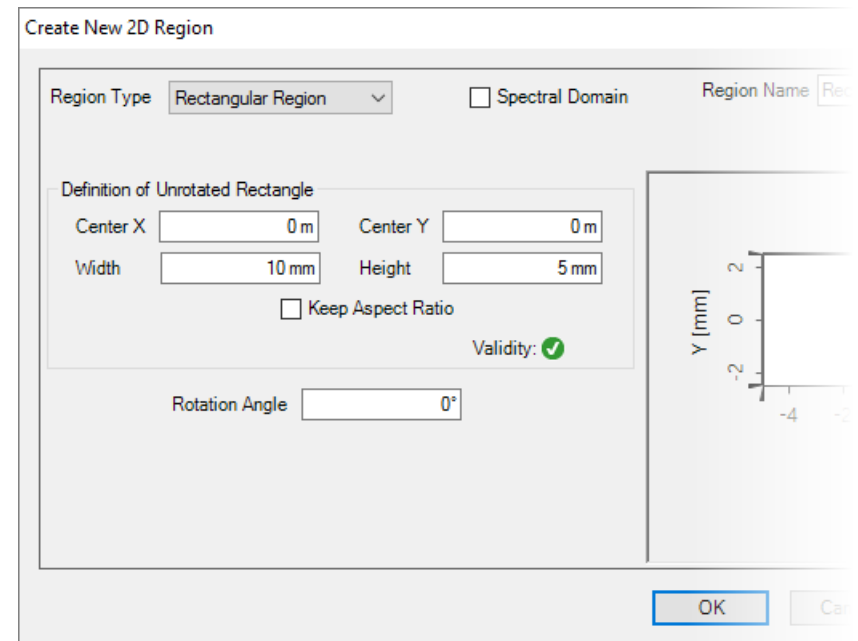- Grating region configuration in waveguide toolbox

One can select any active region documents as *Evaluation Region* for the region shape definition.
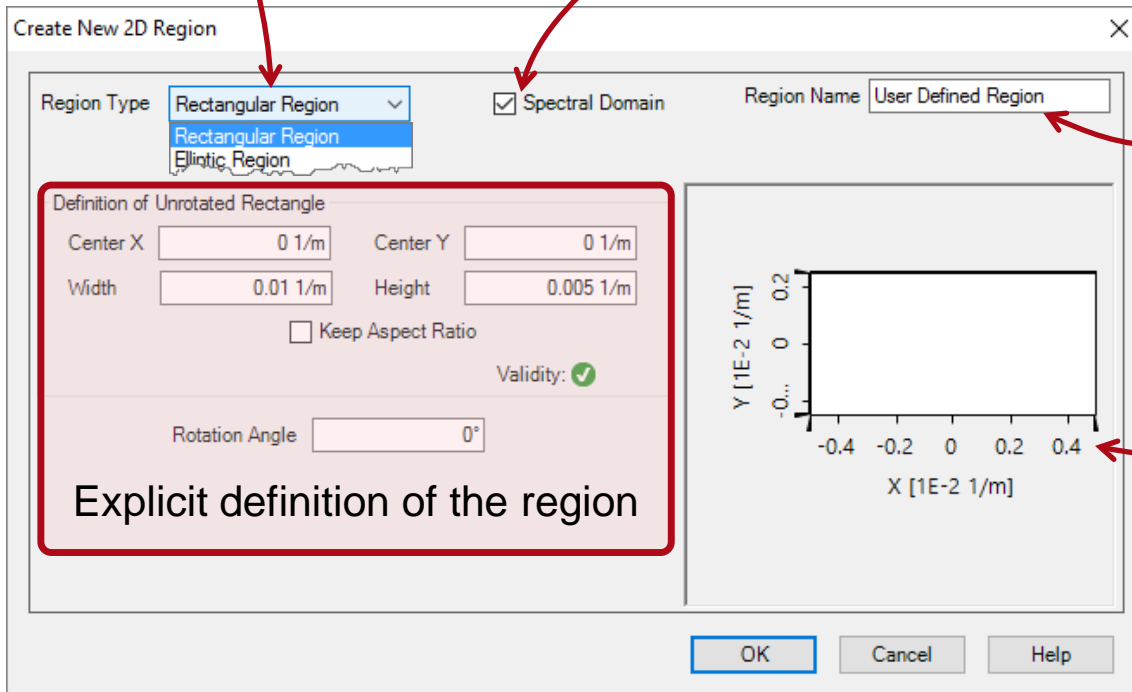
Region Generation

- In the *Functions* ribbon, we click on the *Region* icon.
- In what follows, we take 2D regions as examples.

Region Generation

Select region type

Specify definition domain of region: check (angular) Spectral Domain when used as optimization region for the diffractive optics element define with Angular Spectrum setup

Name of the region

Preview of the region

Explicit definition of the region

Create New 2D Region

Region Type: Rectangular Region
- Rectangular Region
- Elliptic Region

☑ Spectral Domain

Region Name: User Defined Region

Definition of Unrotated Rectangle

Center X: 0 1/m   Center Y: 0 1/m
Width: 0.01 1/m   Height: 0.005 1/m
☐ Keep Aspect Ratio
Validity: ✓
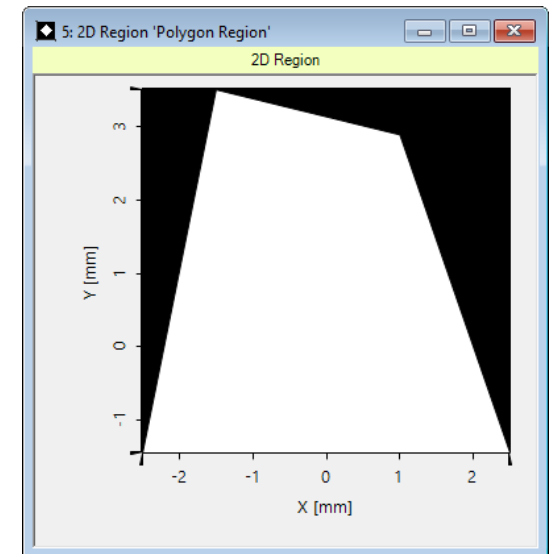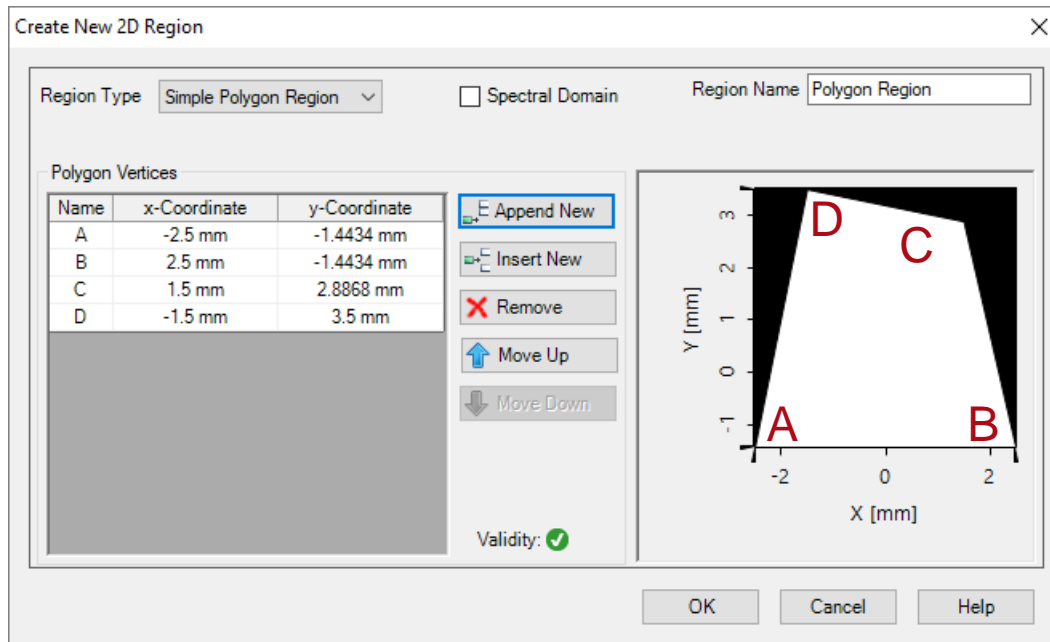Rotation Angle: 0°

OK   Cancel   Help

Example

- Rectangular region
  - Define center position, width and height, and rotation angle.
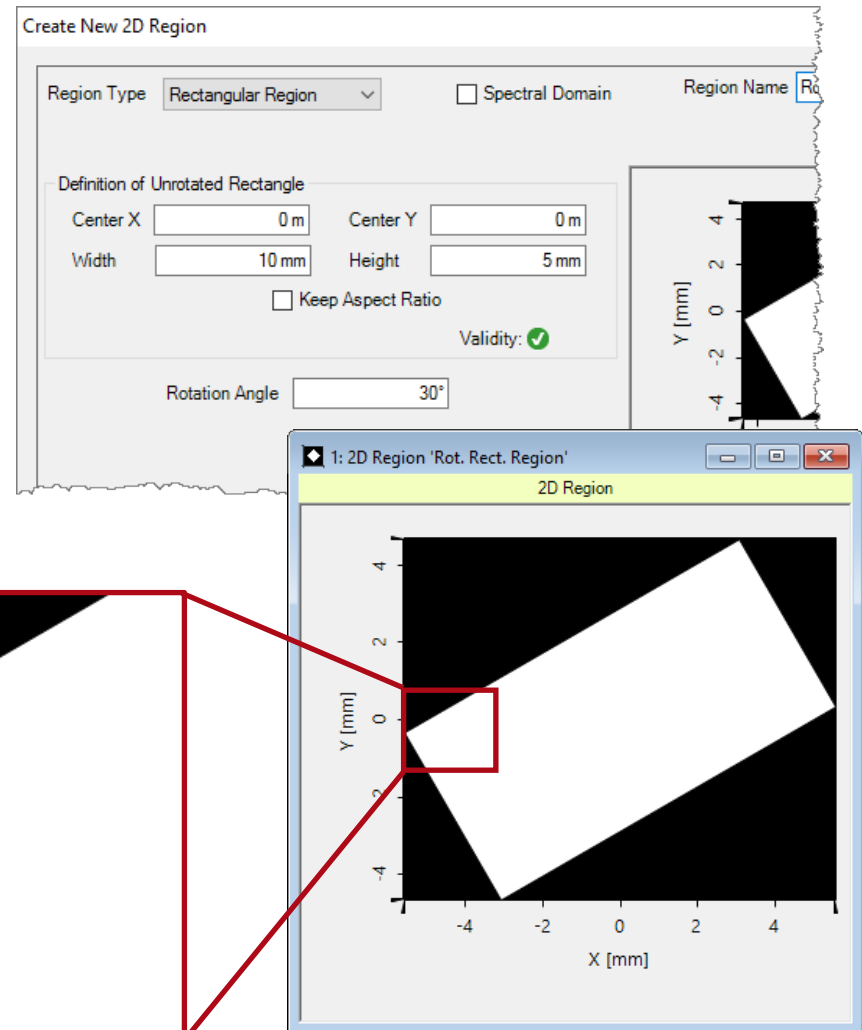
Rectangular region is defined analytically by its parameters, and thus can be zoomed arbitrarily.

Create New 2D Region

Region Type [Rectangular Region ⌄]   ☐ Spectral Domain   Region Name [Ro

Definition of Unrotated Rectangle

Center X [0 m]   Center Y [0 m]
Width [10 mm]   Height [5 mm]
☐ Keep Aspect Ratio

Validity: ✔

Rotation Angle [30°]

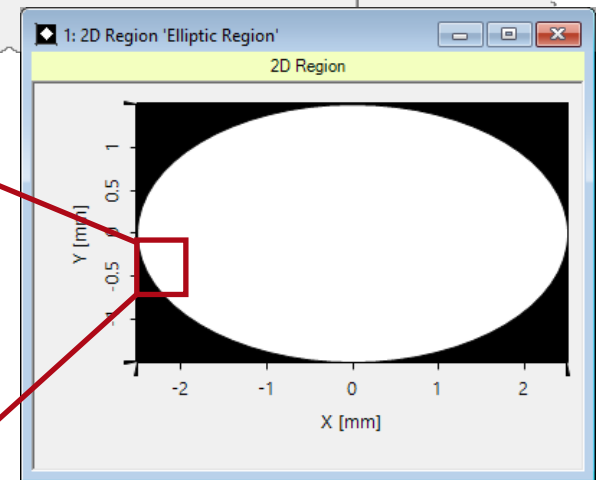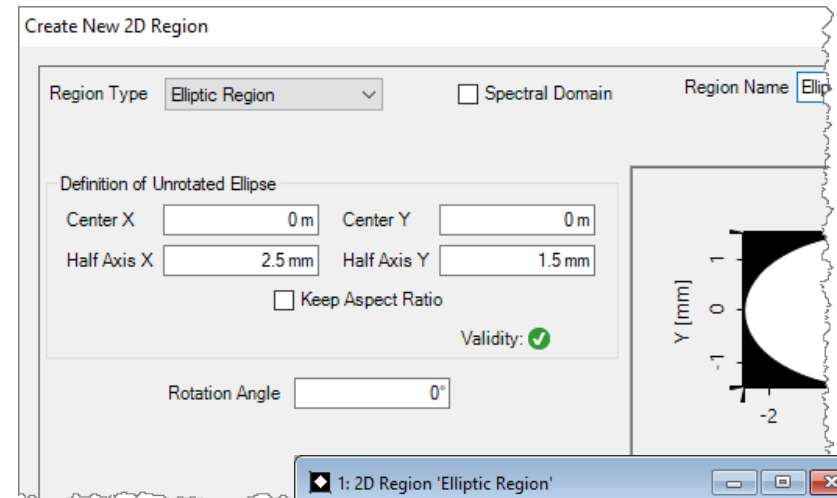1: 2D Region 'Rot. Rect. Region'

2D Region

Example

- Polygon region
  - Type in positions of polygon vertices in successive sequence.

Polygon region is also defined analytically by its parameters.

Example

- Elliptic region
 - Define center position, half axes, and rotation angle.

Elliptic region is defined analytically by its parameters.

Example

- Sampled region
  - It is defined by sampled data, which can be loaded from existing file, imported from text or bitmap, or selected from active Numerical DataArray in VirtualLab window.
  - We load the attached Numerical DataArray.

    Pixelated effect from discrete sampling points is obvious.
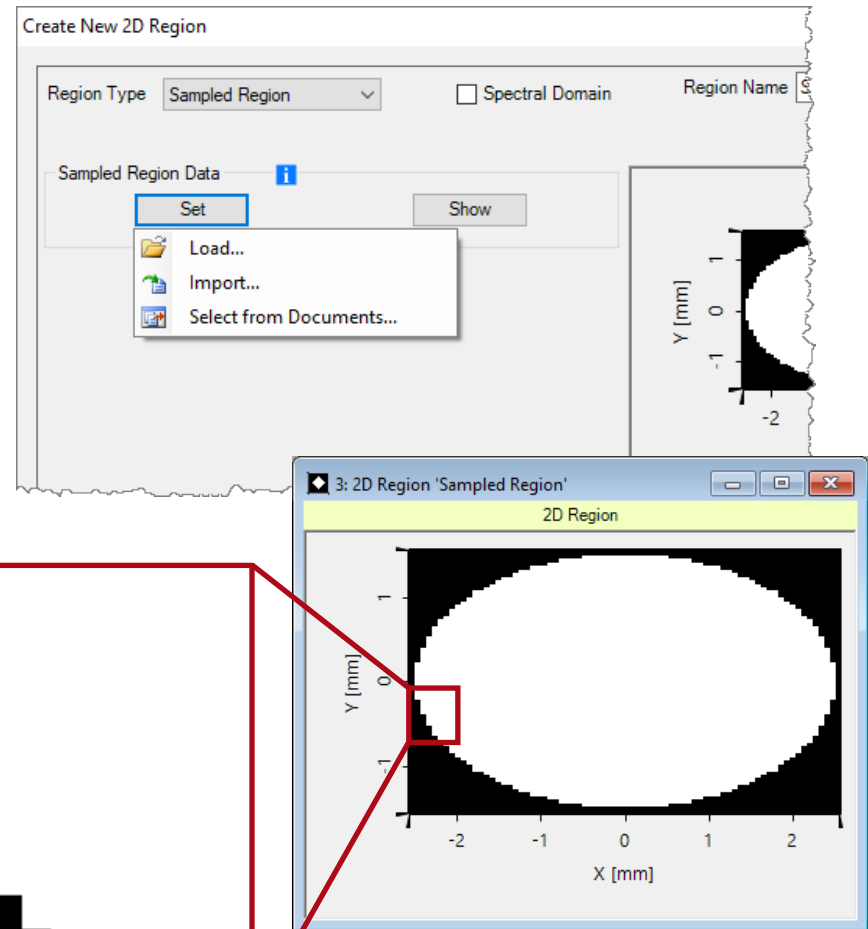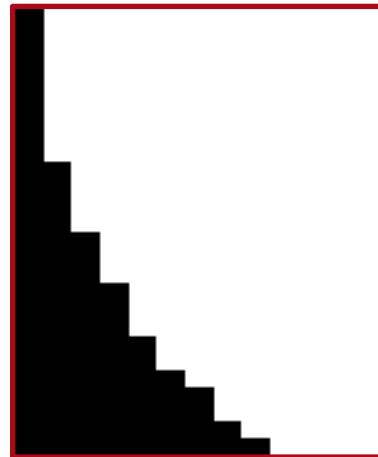
Example

- Composed region
    - Create two subregions, both in circular shape.
    - One with smaller radius and the other larger.
    - Choose *XOR* under *Composition Mode*.
    - A ring shape is then obtianed.
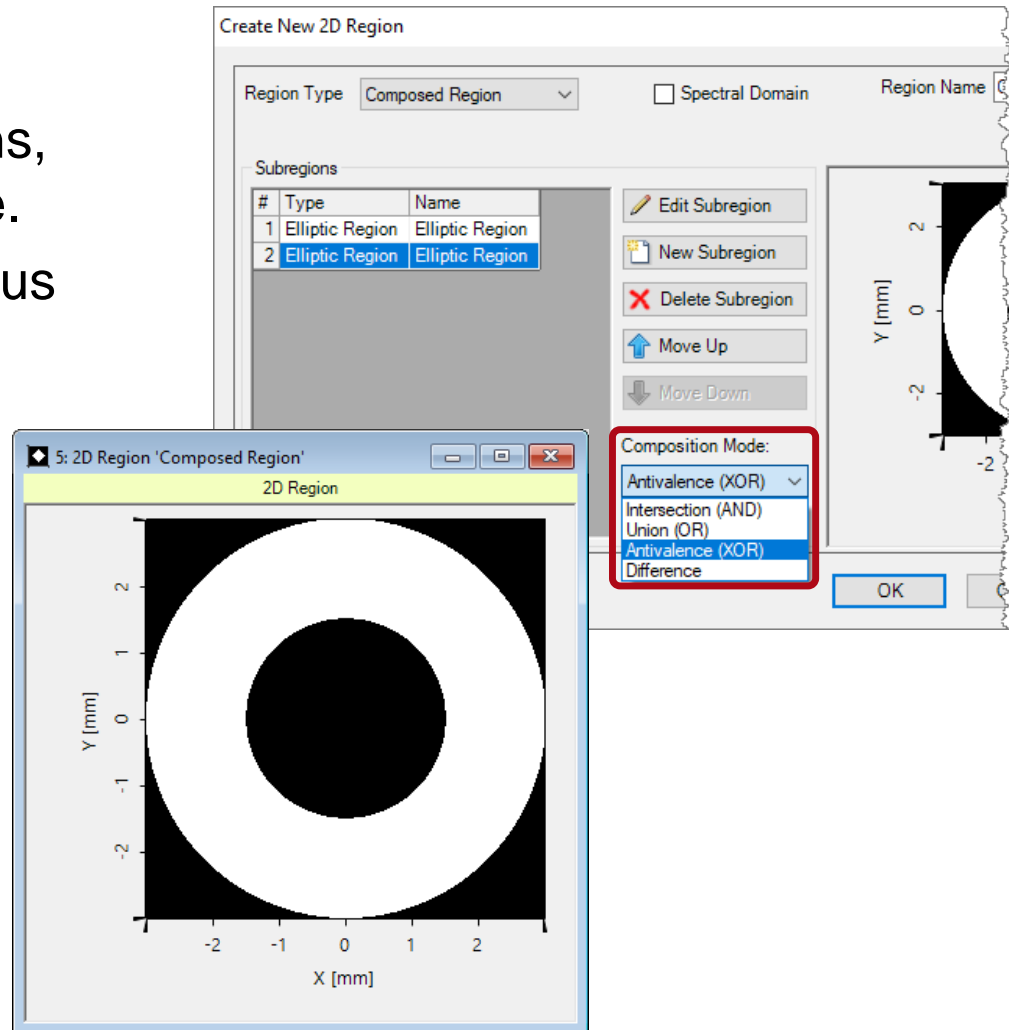
Document & Technical Info

code	Feature.0020
version of document	1.0
title	Flexible Region Configuration
category	Configuration
author	Site Zhang (LightTrans)
used VL version	7.0.0.35
last modified on	August 28, 2017