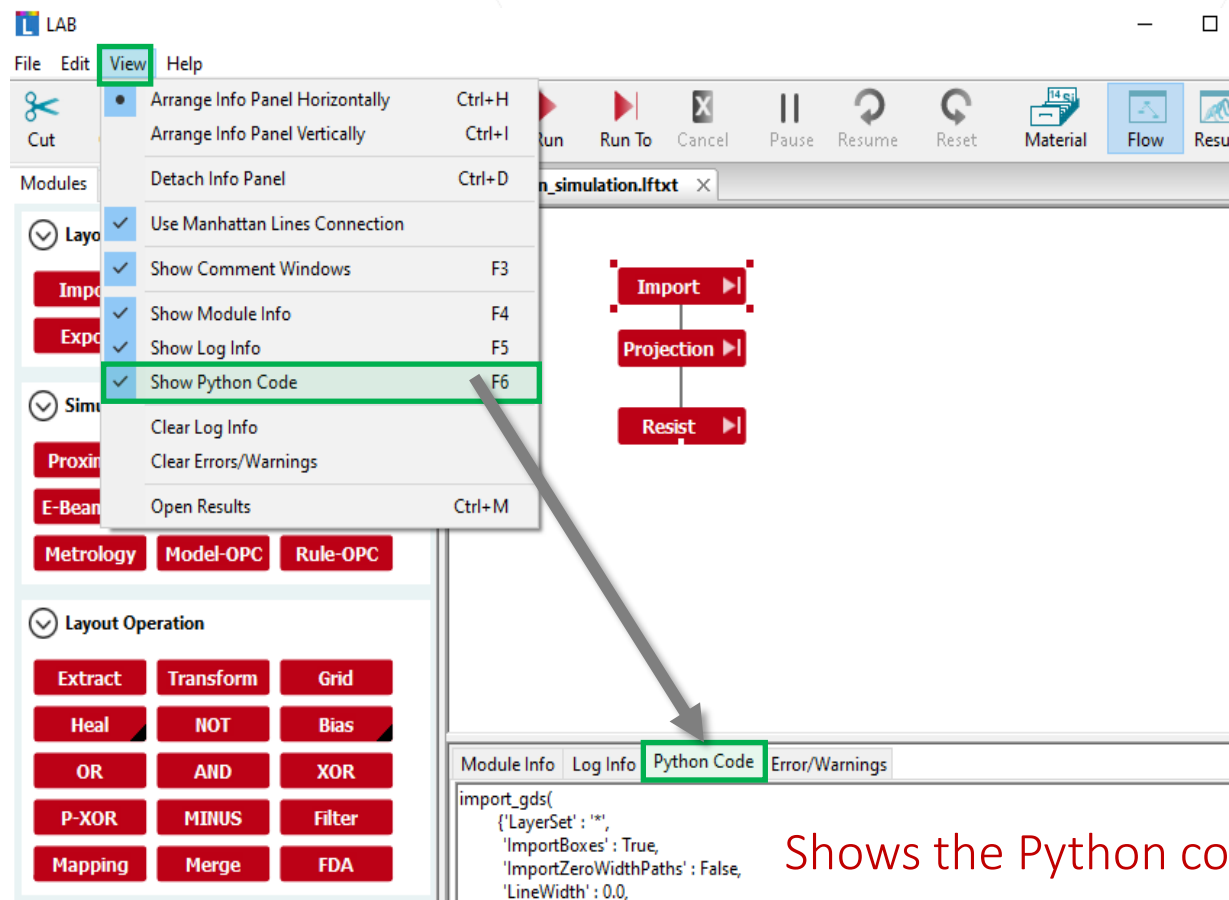


# LAB

What's new v5.11

# Python API

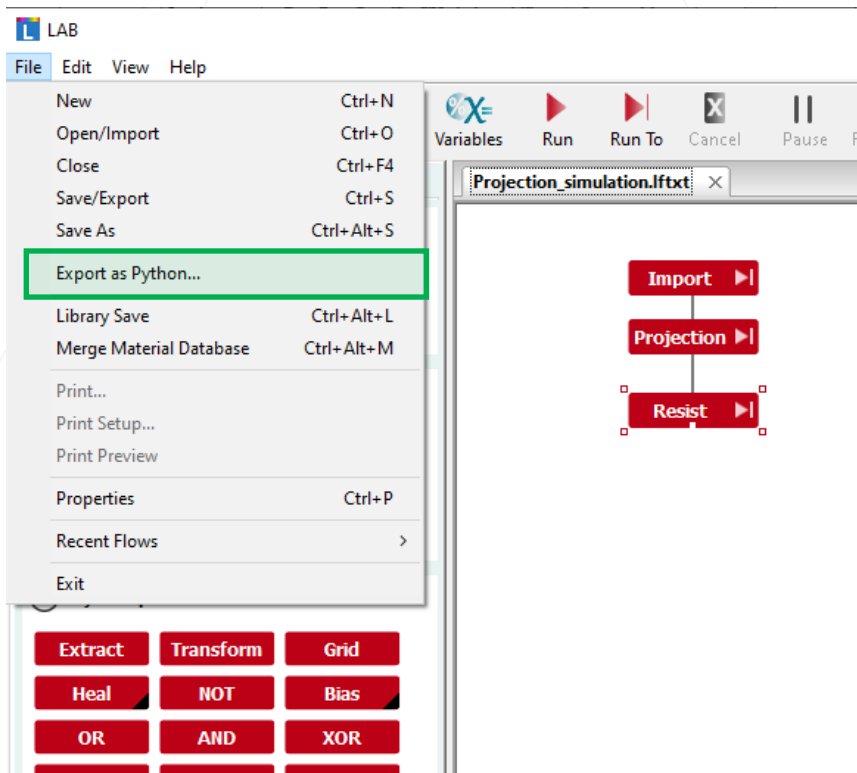
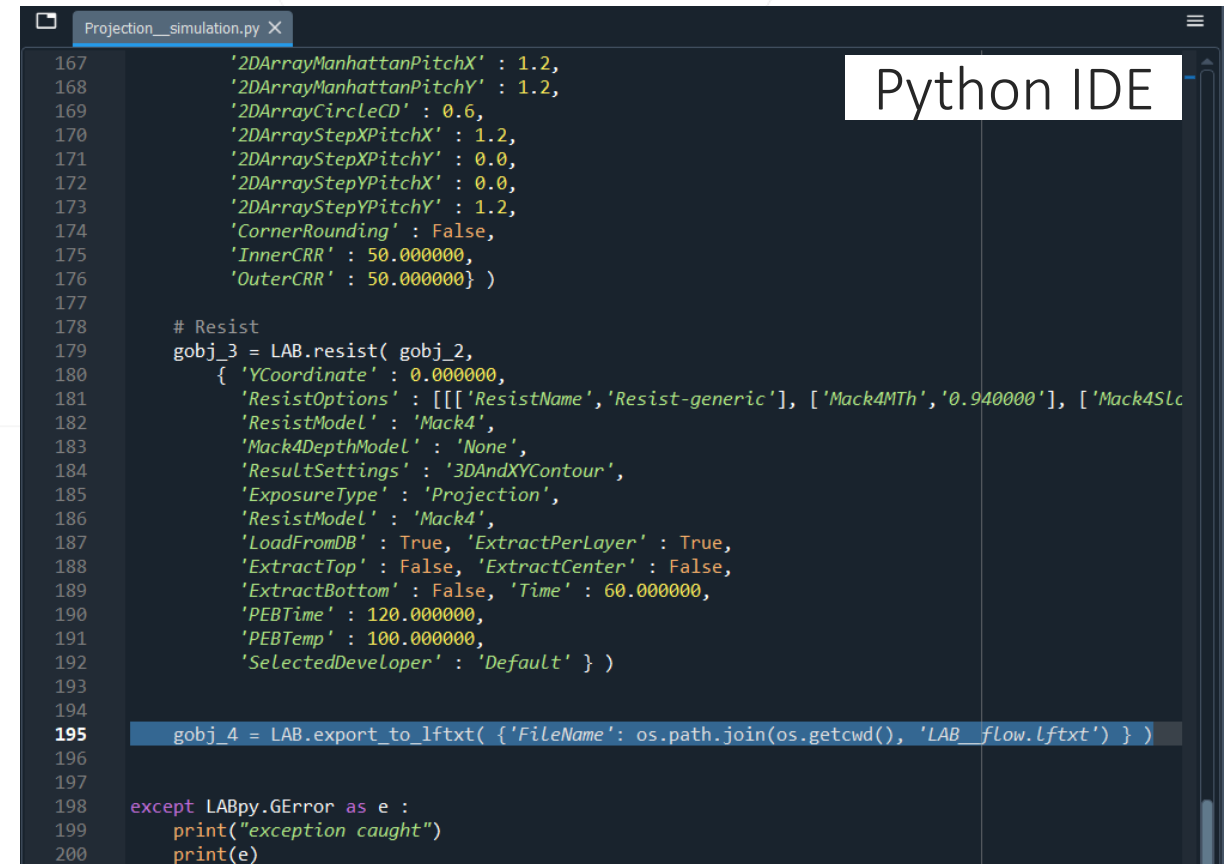
- LAB supports Python API, providing a flexible environment for running LAB in a command-line driven environment.
- User can visualize the python command for a selected module.



Shows the Python code of the selected module

Optional feature

- LAB supports exporting flows to Python code and vice versa

The screenshot shows a Python IDE window titled 'Projection\_simulation.py'. The code defines a resist simulation flow. The first part sets up a 'Resist' object with various parameters. The second part uses the `LAB.export_to_lftxt()` function to export the flow to an LFTXT file. The code is as follows:

```

167 '2DArrayManhattanPitchX' : 1.2,
168 '2DArrayManhattanPitchY' : 1.2,
169 '2DArrayCircleCD' : 0.6,
170 '2DArrayStepXPitchX' : 1.2,
171 '2DArrayStepXPitchY' : 0.0,
172 '2DArrayStepYPitchX' : 0.0,
173 '2DArrayStepYPitchY' : 1.2,
174 'CornerRounding' : False,
175 'InnerCRR' : 50.000000,
176 'OuterCRR' : 50.000000 )
177
178 # Resist
179 gobj_3 = LAB.resist( gobj_2,
180 { 'YCoordinate' : 0.000000,
181   'ResistOptions' : [[['ResistName', 'Resist-generic'], ['Mack4MTh', '0.940000'], ['Mack4SLc
182   'ResistModel' : 'Mack4',
183   'Mack4DepthModel' : 'None',
184   'ResultSettings' : '3DAndXYContour',
185   'ExposureType' : 'Projection',
186   'ResistModel' : 'Mack4',
187   'LoadFromDB' : True, 'ExtractPerLayer' : True,
188   'ExtractTop' : False, 'ExtractCenter' : False,
189   'ExtractBottom' : False, 'Time' : 60.000000,
190   'PEBTime' : 120.000000,
191   'PEBTemp' : 100.000000,
192   'SelectedDeveloper' : 'Default' } )
193
194
195 gobj_4 = LAB.export_to_lftxt( {'FileName': os.path.join(os.getcwd(), 'LAB_flow.lftxt') } )
196
197
198 except LABpy.GError as e :
199     print("exception caught")
200     print(e)

```

- A LAB Python flow can be converted to a LAB flow using the command `LAB.export_to_lftxt()`

Optional feature

- The Python API for **LAB** supports the following commands:
  - Layout import
  - Layout basic operations (*Extract, Transform, Grid, etc.*)
  - Exposure simulation (*Projection, Proximity, Laser and E-beam*)
  - *Resist* development
  - *Model-OPC* and *Rule-OPC*
  - 3D export results as .lit, .xml and .csv
    - Aerial image
    - Bulk image
    - PAC image
    - Developer arrival time (DAT) image
  - Variable loops via Python

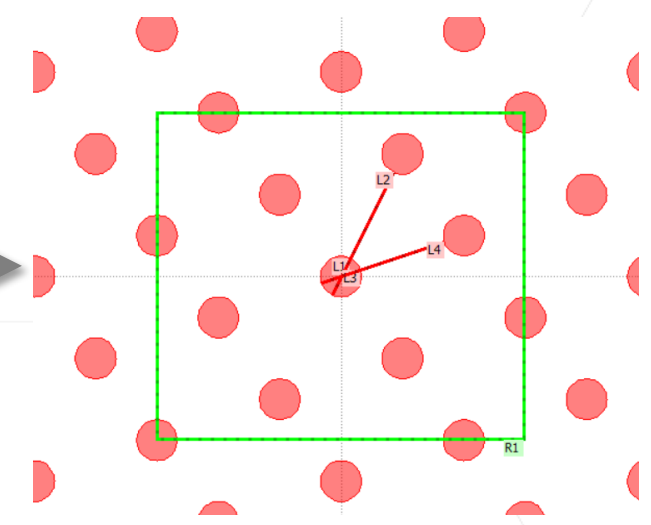
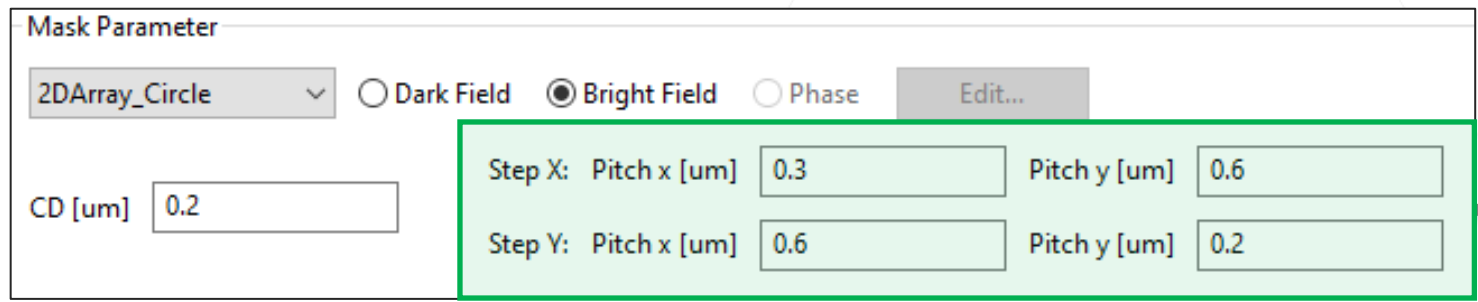
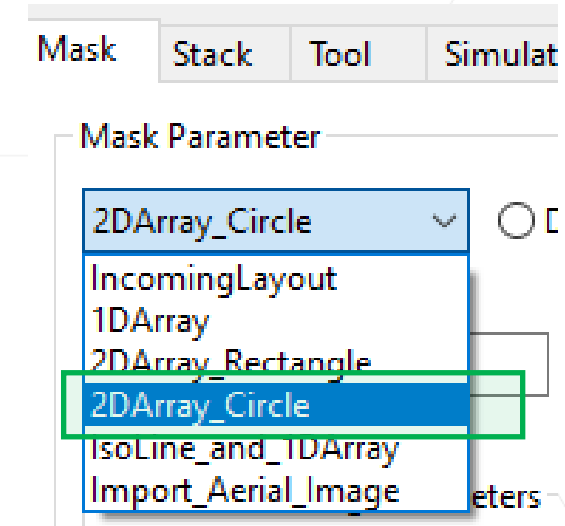
Optional feature

# Predefined 2D Circle Array

- Layout *2DArray\_Circle* included to define a 2D circle/dot array
- 2D-array base for non-Manhattan patterns

Circles diameter:  $CD$

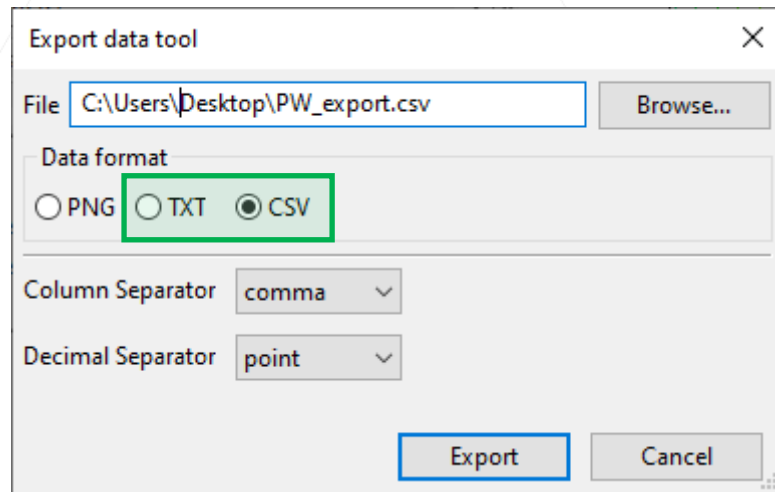
Parameters:  $\begin{pmatrix} Pitch\ x \\ Pitch\ y \end{pmatrix}_{Step\ X}$  and  $\begin{pmatrix} Pitch\ x \\ Pitch\ y \end{pmatrix}_{Step\ Y}$



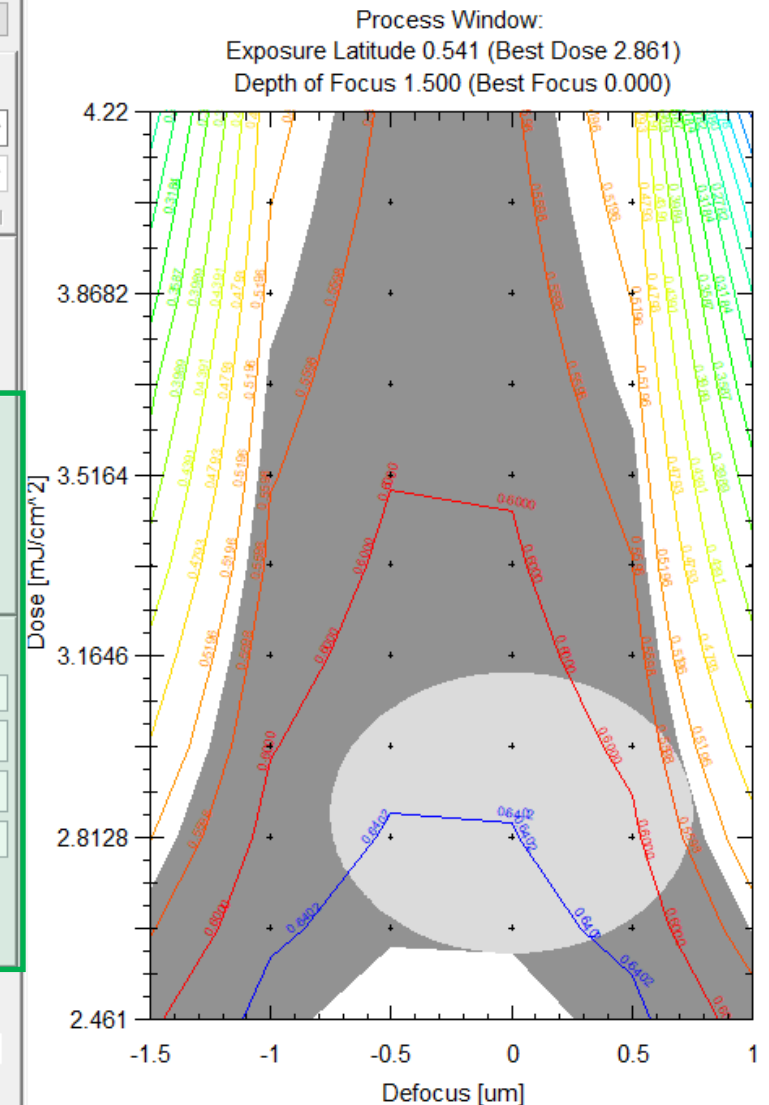
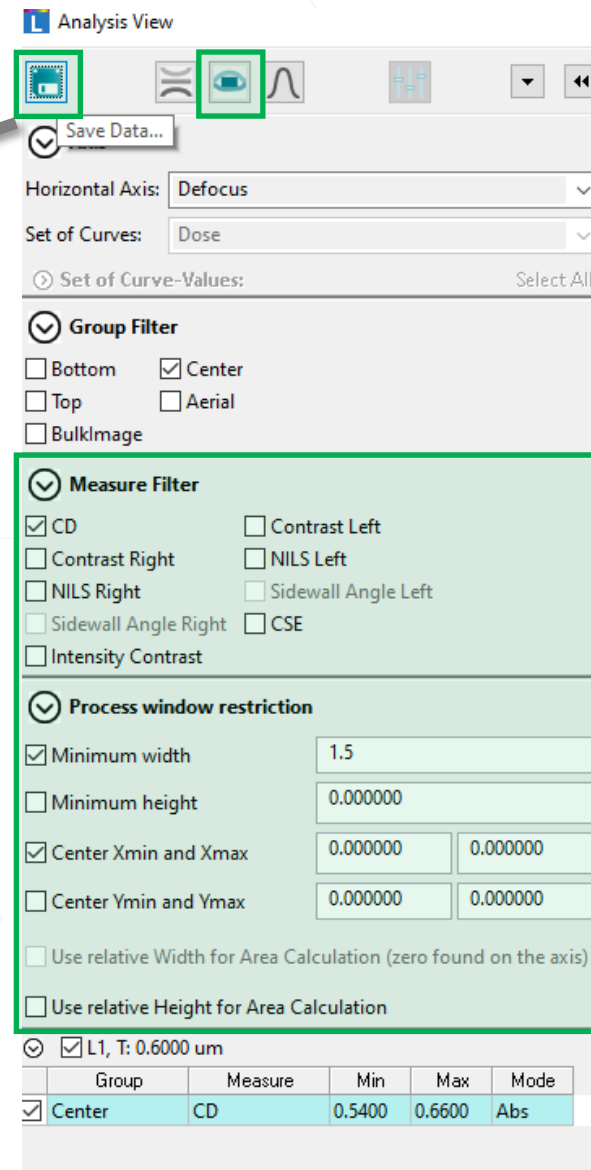
# Process Window Export



- Process Window information is exported via the save button



- Filters and process window restrictions are saved

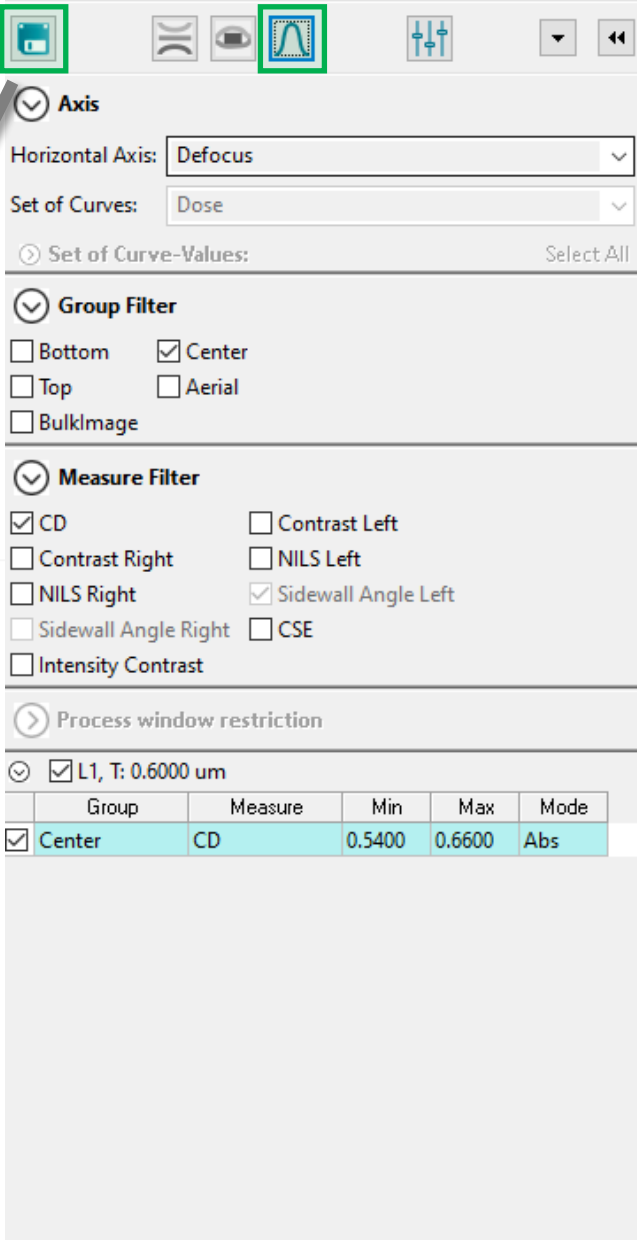


- Exposure Latitude vs Depth of Focus data is exported via the save button too

```

DoF_export.txt - Notepad
File Edit Format View Help
#Exposure Latitude vs. DOF
#Depth of Focus [um]    Exp. Lat. [%]
0      50.9681
0.125  50.7863
0.25   50.5969
0.375  50.1493
0.5    49.5495
0.625  48.7763
0.75   48.0357
0.875  47.8167
1      47.7696
1.125  47.7203
1.25   47.6736
1.375  47.6234
1.5    47.5236
1.625  42.7880
1.75   34.4516
1.875  27.5237
2      21.5038
2.125  16.1893
2.25   11.2376
2.375  8.5967
2.5    0.0000

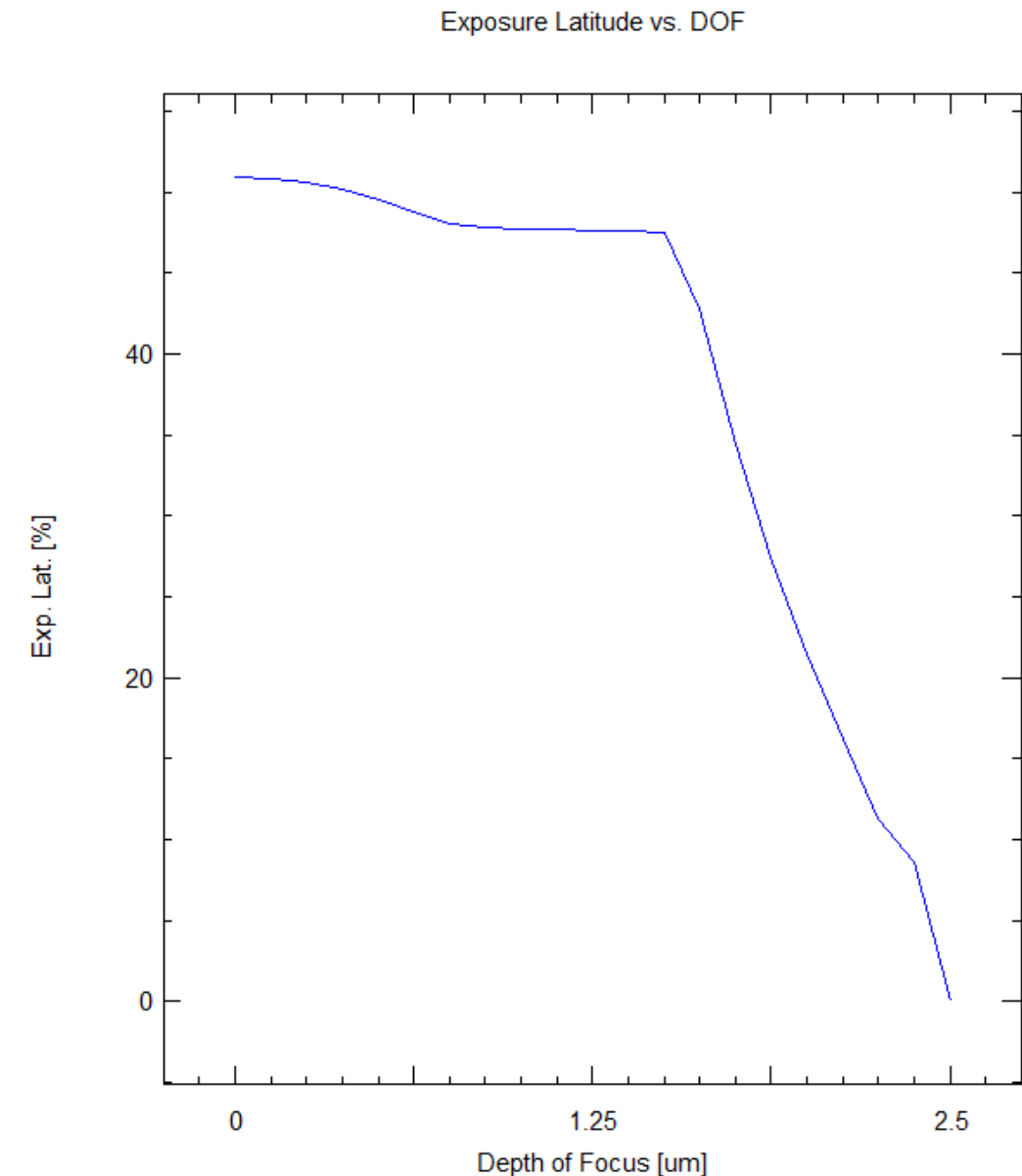
#Name  Target Value  Group  Measure  Minimum  Maximum
L1     0.6000  Center  CD       0.5400  0.6600
    
```



The screenshot shows the GenISys software interface with the following settings:

- Axis:** Horizontal Axis: Defocus; Set of Curves: Dose; Set of Curve-Values: Select All
- Group Filter:**
  - Bottom
  - Center
  - Top
  - Aerial
  - BulkImage
- Measure Filter:**
  - CD
  - Contrast Right
  - NILS Right
  - Sidewall Angle Right
  - Intensity Contrast
  - Contrast Left
  - NILS Left
  - Sidewall Angle Left
  - CSE
- Process window restriction:**
  - L1, T: 0.6000 um

Group	Measure	Min	Max	Mode
<input checked="" type="checkbox"/> Center	CD	0.5400	0.6600	Abs



# Thank You!

support@genisys-gmbh.com

## Headquarters

GenISys GmbH  
Eschenstr. 66  
D-82024 Taufkirchen (Munich)  
GERMANY

📞 +49-(0)89-3309197-60

📠 +49-(0)89-3309197-61

✉ info@genisys-gmbh.com

## USA Office

GenISys Inc.  
P.O. Box 410956  
San Francisco, CA  
94141-0956  
USA

📞 +1 (408) 353-3951

✉ usa@genisys-gmbh.com

## Japan / Asia Pacific Office

GenISys K.K.  
German Industry Park  
1-18-2 Hakusan Midori-ku  
Yokohama 226-0006  
JAPAN

📞 +81 (0)45-530-3306

📠 +81 (0)45-532-6933

✉ apsales@genisys-gmbh.com

