GenISys
Advancing the Standard

BEAMER

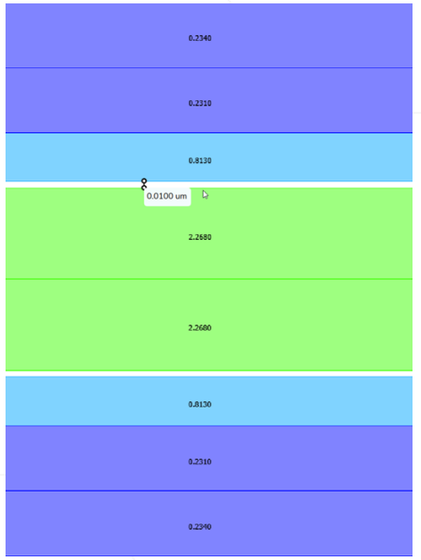
Update – What‘s new / What‘s coming up

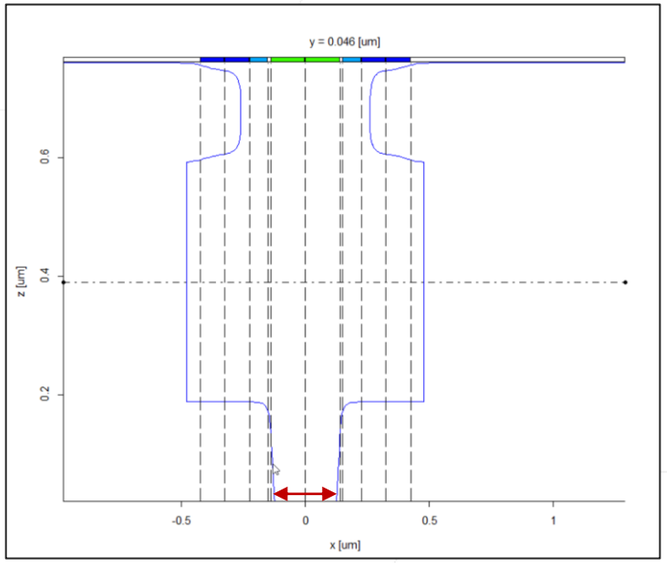
PEC

Improvement of T-gate PEC

The correction criteria has been adjusted to the bottom CD of the Tgate foot to ensure clearing of the resist (10% above the substrate interface).

This will change the correction results in BEAMER 7.2.





info

3D Settings:

3D Assignments:

Idx	Layer	Assignment	rel. Dose
0	1(0)	----------	0.4657
1	2(0)	----------	0.1306
2	0(0)	----------	1.0969
3	3(0)	----------	2.1938

Resist Process Time Factor (relative to contrast curve process of critical layer) = 1.0000

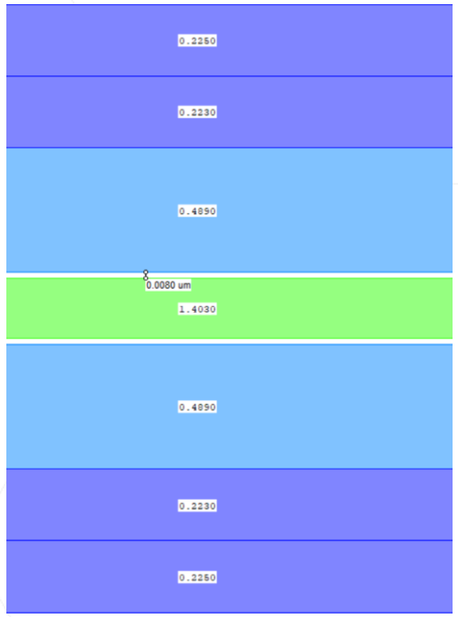
Equivalent Alpha[um]: 0.057, Equivalent Beta[um]: 2.512, Equivalent Eta : 1.145

Min. layout independent LR dose factor = 0.652

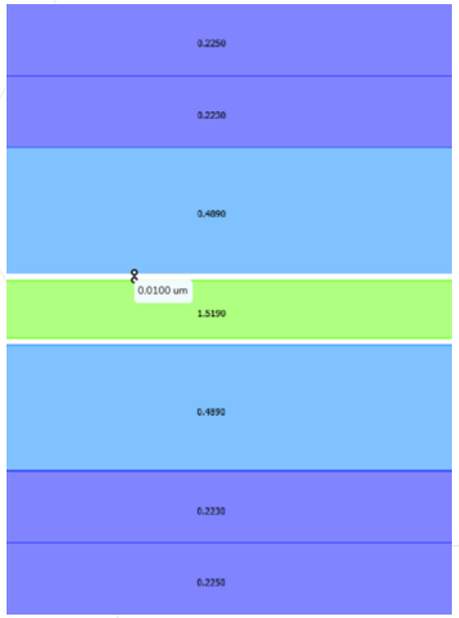
Number Doseclasses: 255

3D T-gate PEC: Contrast Curve data processing

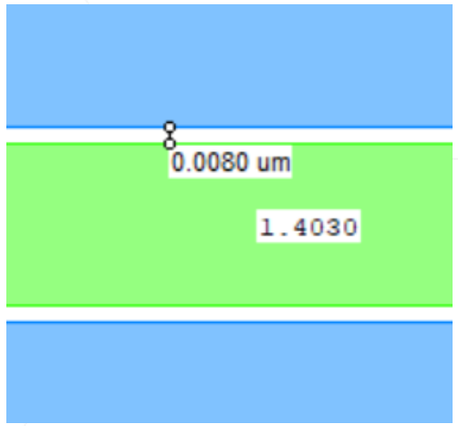
- In the previous version, the default gate-PEC dose was equal to the dose to clear of the foot Contrast Curve, so the development time had to be slightly increased.
- It is now assumed that the CC and the T-gate PEC are performed with the same process, including time. This increases the default gate-PEC dose since we need a dose that fully develops through all layers within the same process time.
- In summary, the foot layer receives a higher dose making it consistent with the simulation.

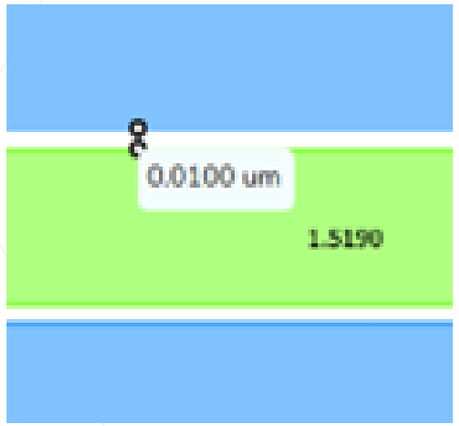


BEAMER 7.1.0

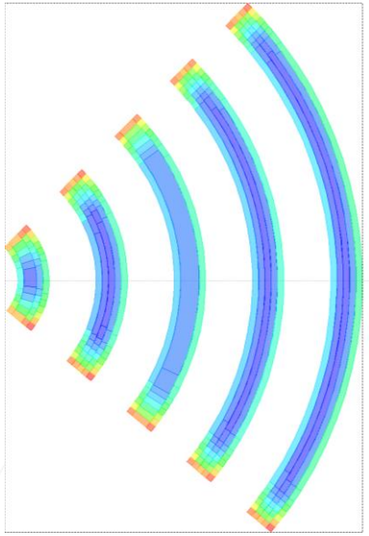


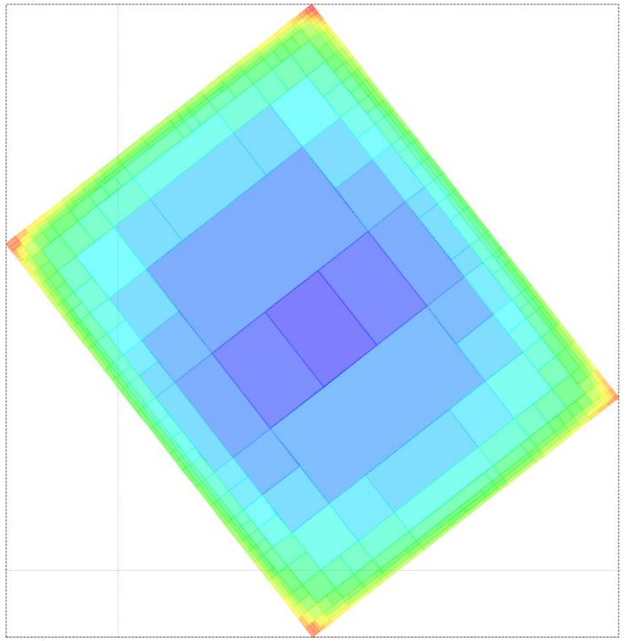
BEAMER 7.2.0

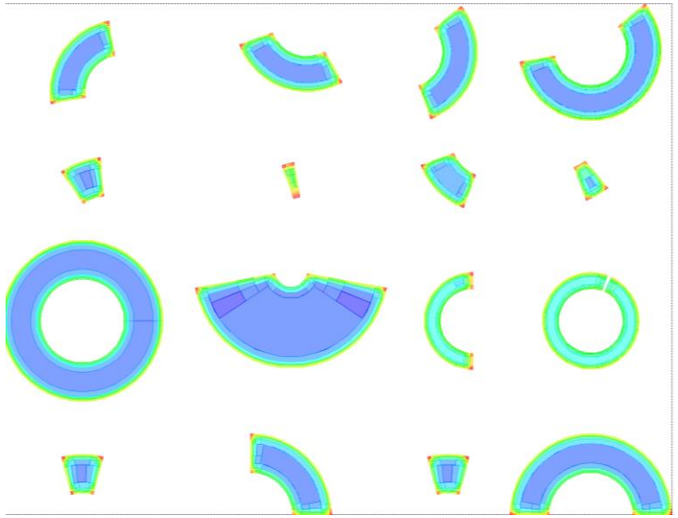




Improved PEC fracturing





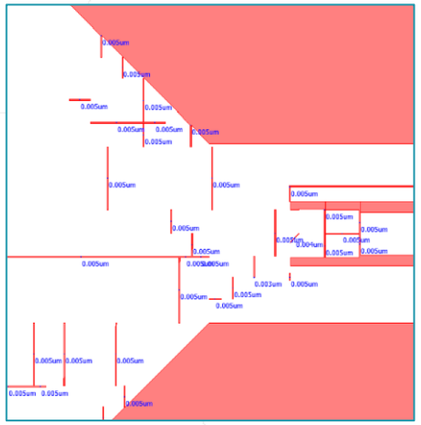


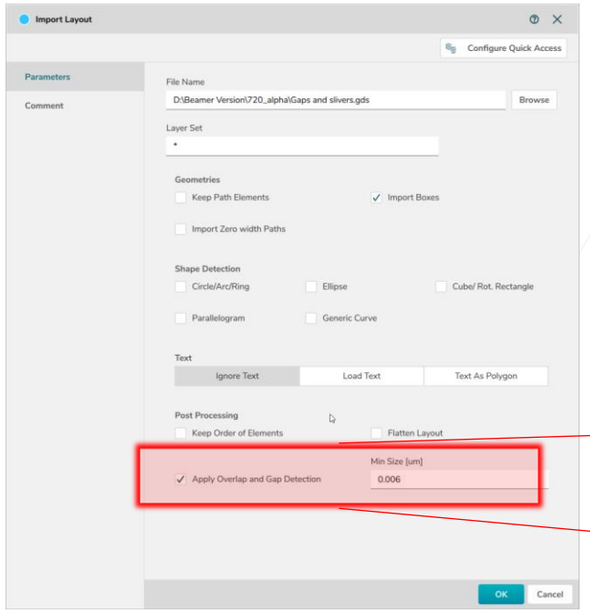
Generic element types like Circles / Arcs / Rotated Rectangles are maintained during fracturing. Dose fracturing of PEC will fracture e.g. ARC elements only into smaller ARC elements to improve the fracture quality.

Pattern validation

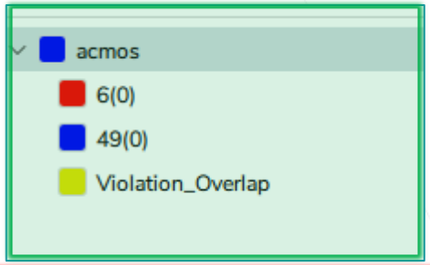
Add functionality (view mode) to show gaps and slivers

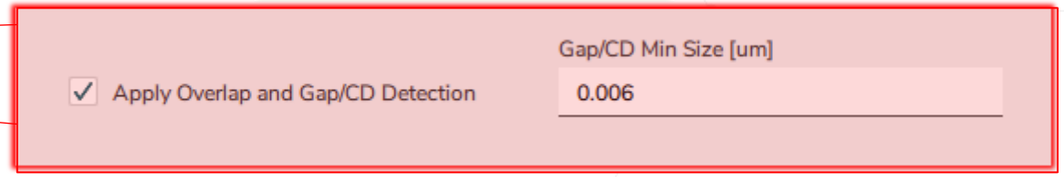
GDS and DXF Import new feature:
Small elements with unintended design issues (gaps and slivers) can be detected and highlighted in viewing mode.

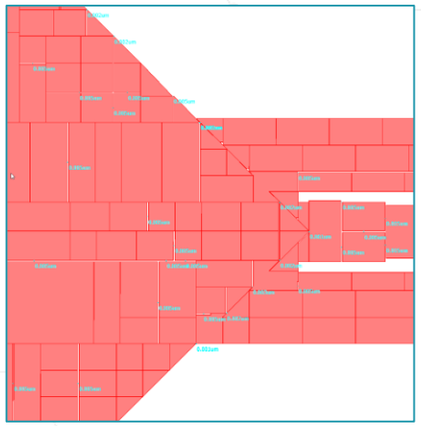




Additional *Layers* are created



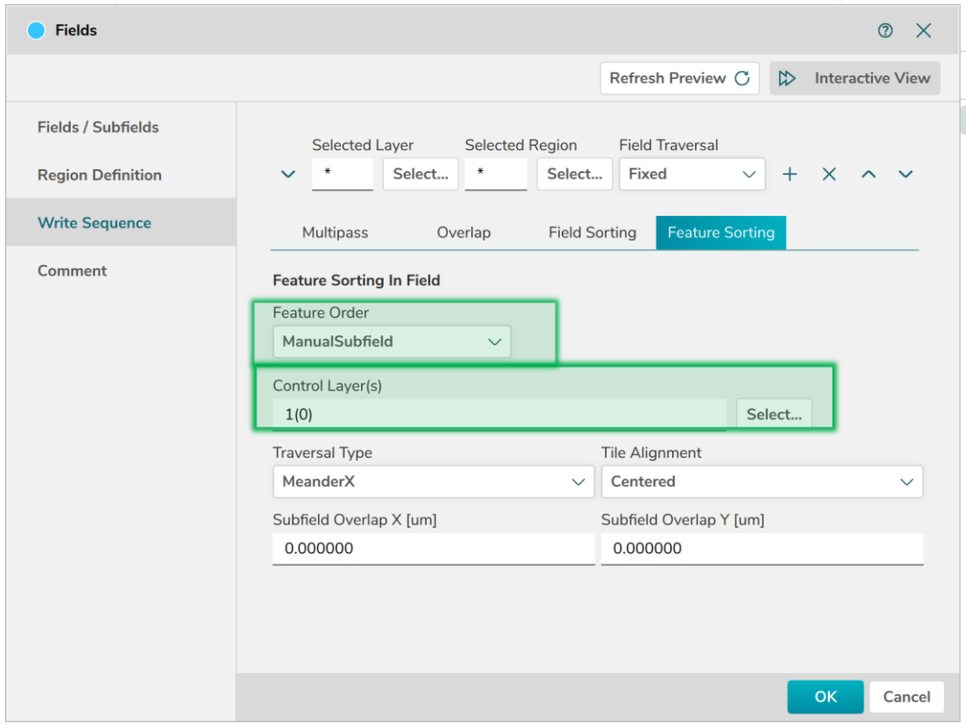


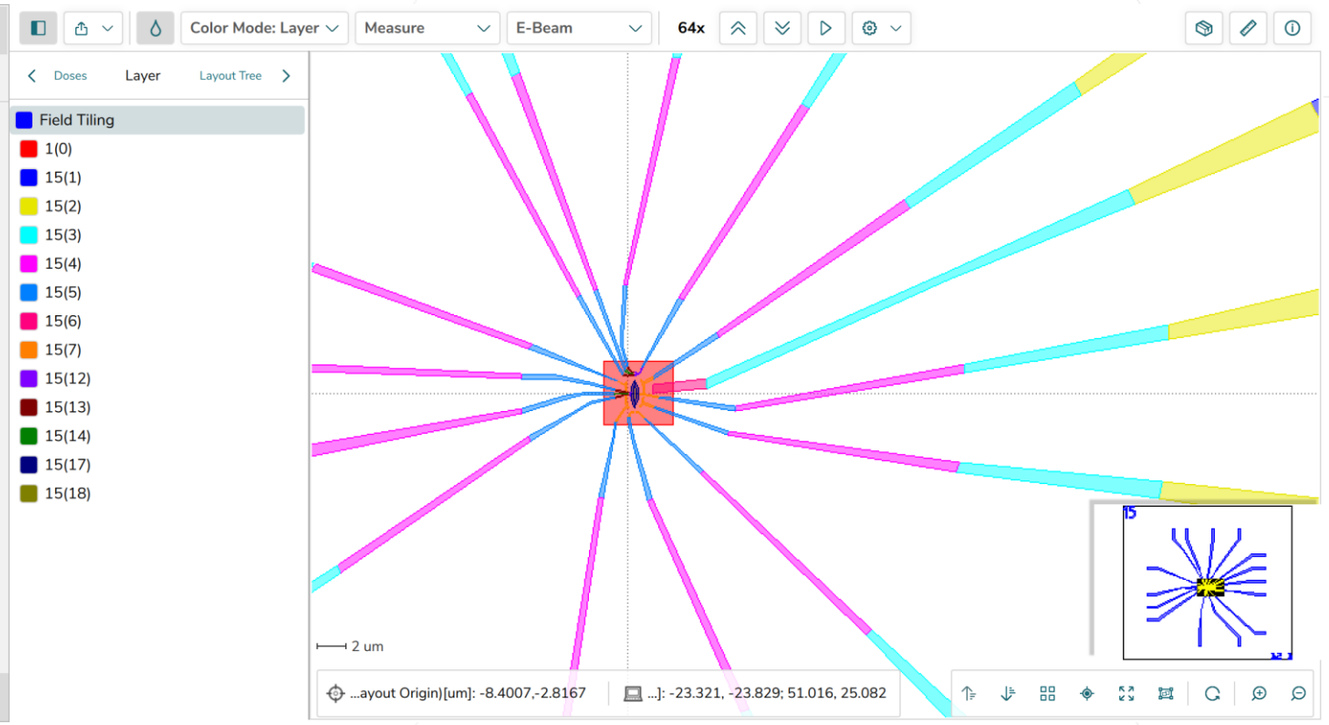


Field control

Fields module – ManualSubfield mode

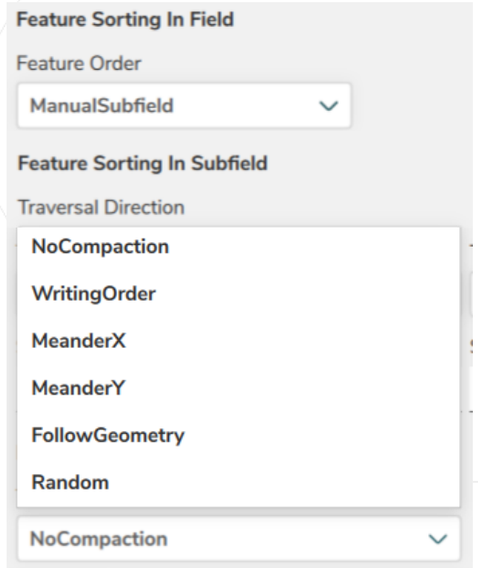
- The exposure order of critical regions within a Field are optimized using ManualSubfield
- The Control layer can be used to identify critical layout parts

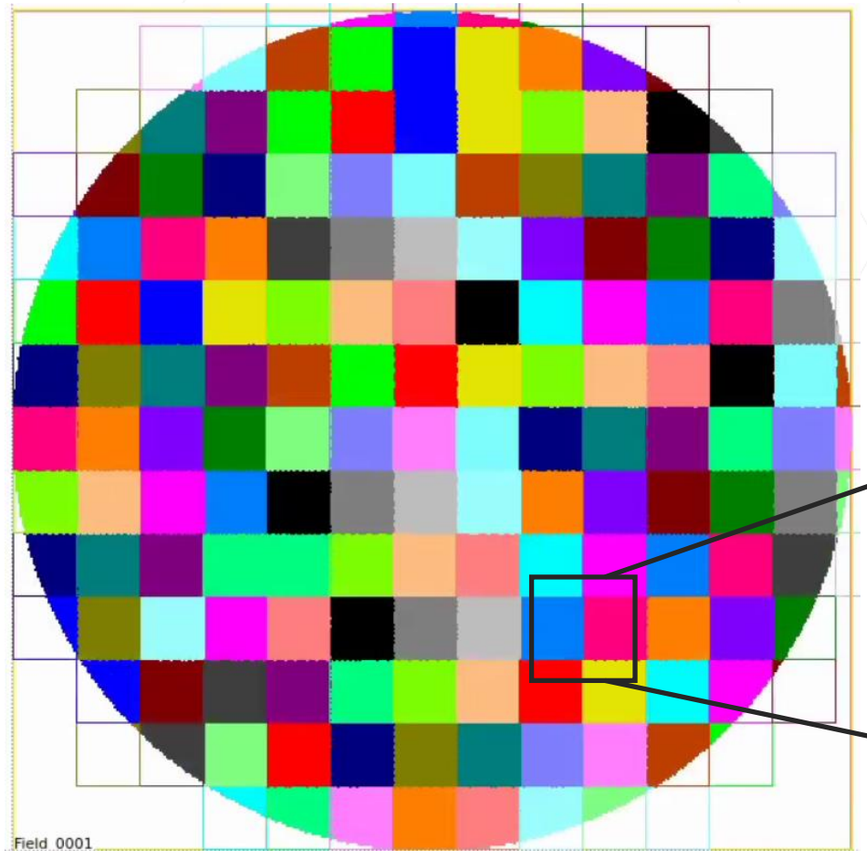


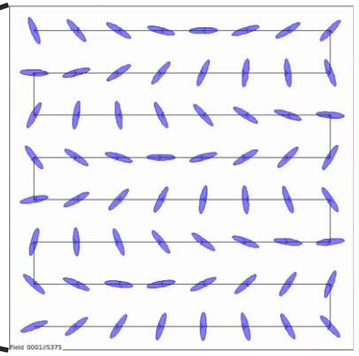


Manual Subfield ordering

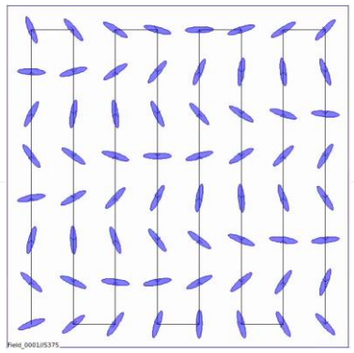
- BEAMER extends the writing field control down to the Subfield level using the Manual Subfield feature sorting, by applying a write sequence to the shapes within a subfield.



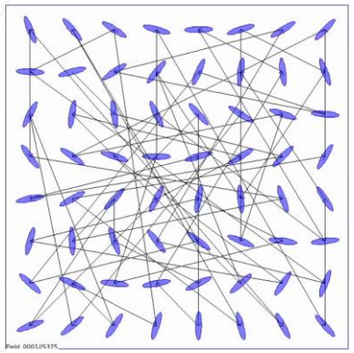




Meander X



Meander Y

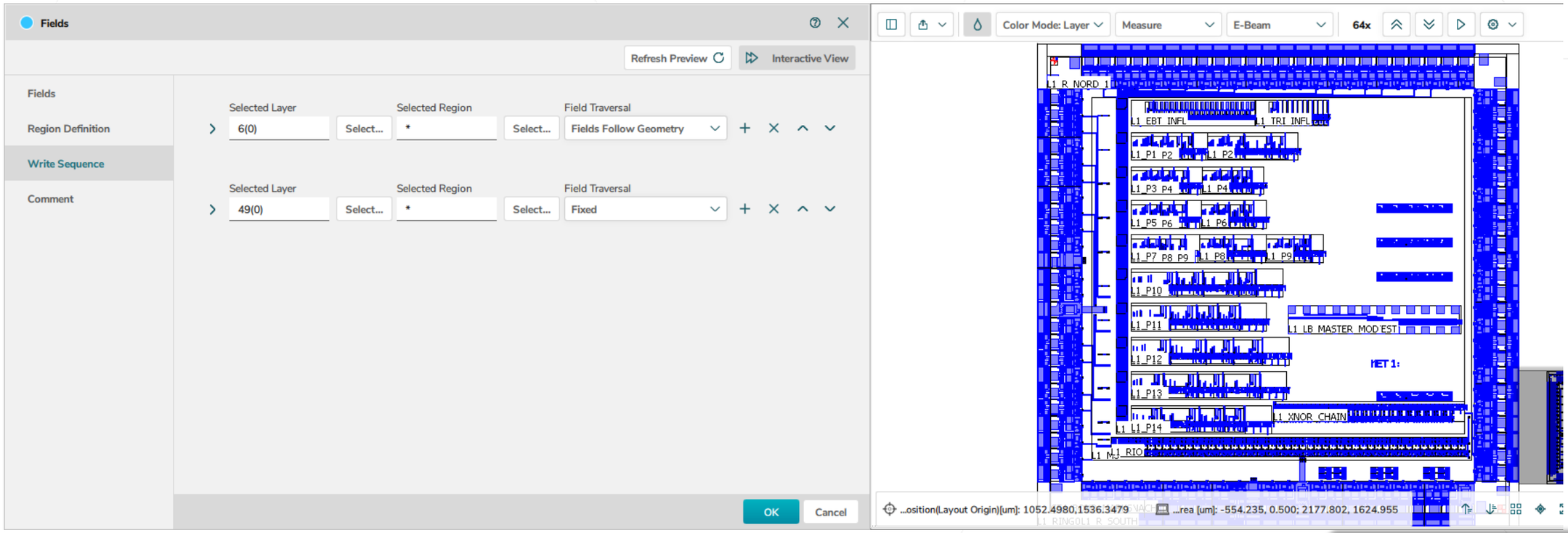


Random

Fields module

New field sorting module – for advanced Region and field sorting applications

- The fields module can create field and region/ sub fields within a layout
- During the system specific export, the user makes use of this structure via cell to field / cell to SF



Shape Sleeving

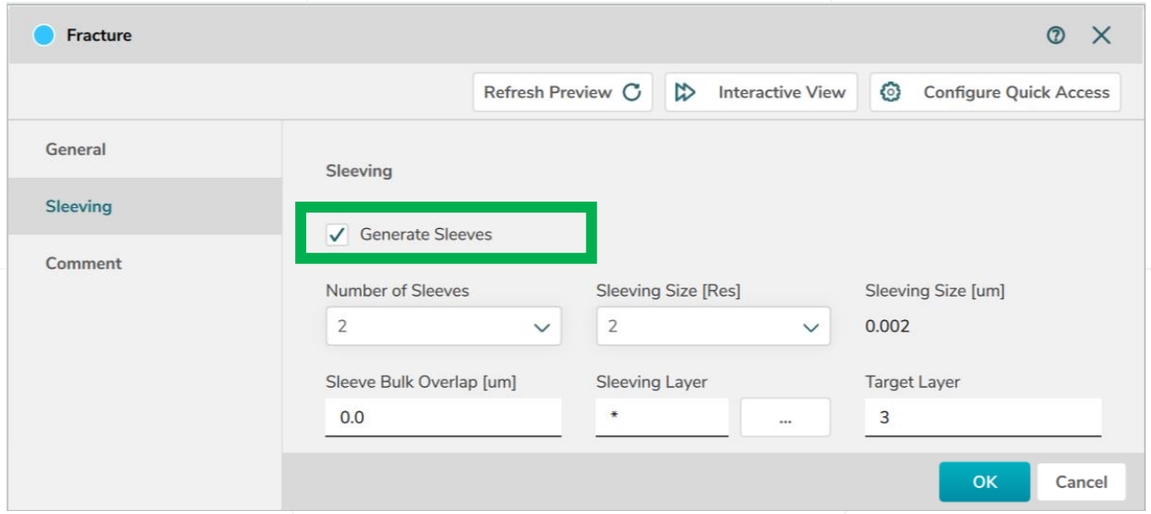
New Fracture Feature

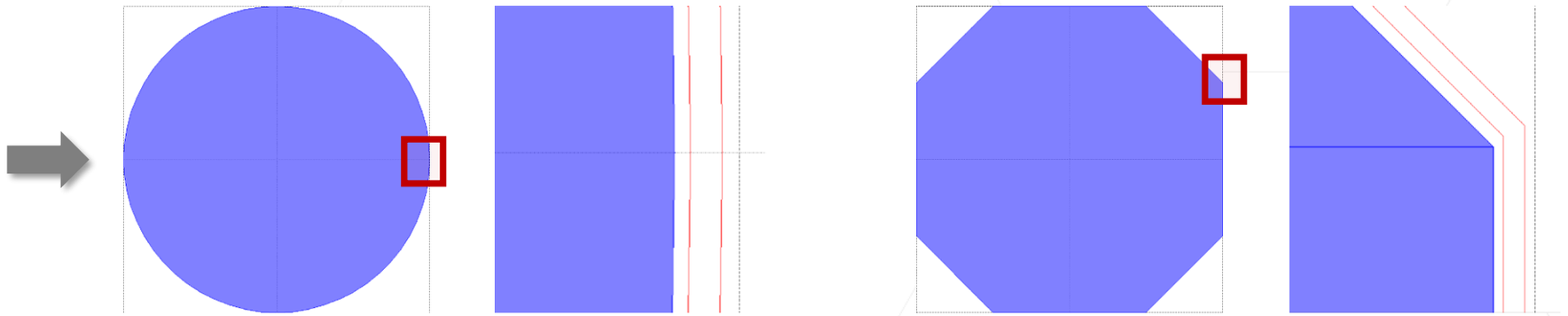
Generate Sleeves

The *Fracture* module includes a fast and easy way to *Generate Sleeves* on target layers using zero width path exposure characteristics increasing pattern quality without affecting throughput.

Parameters to control:

- Number of Sleeves
- Sleeving Size
- Overlap between Sleeve and Bulk
- Sleeving Layer





Sleeves in the Export

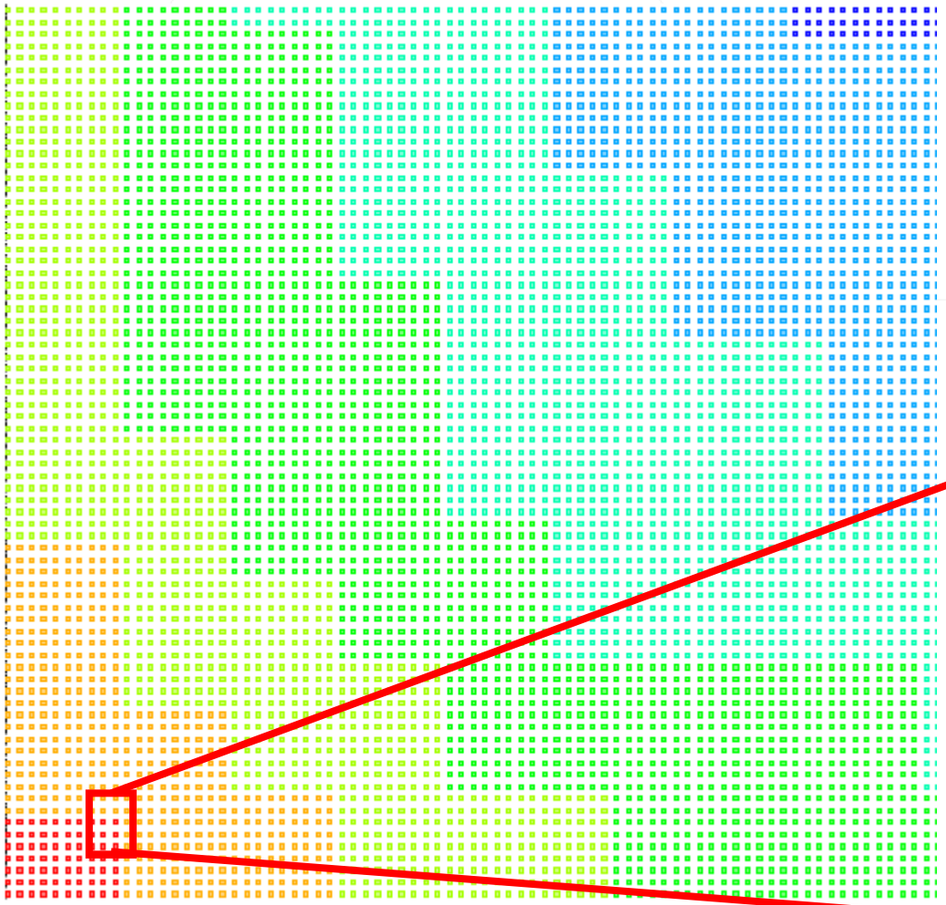
Sleeves generated by this method can find use in the capability of several tool exports:

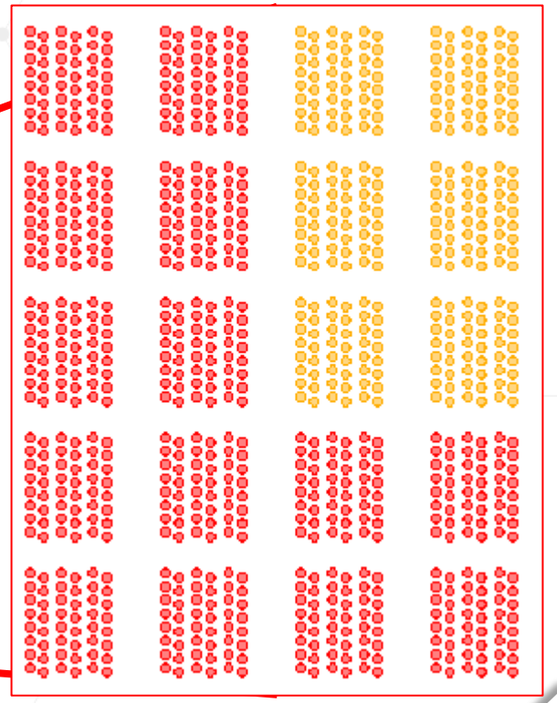
- taking benefit of the unique treatment during the exposure
- utilizing FDA to assign a compesational dose factor for example to benefit from a improved contrast at the edge of the shape
- utilizing Extract & Transform to duplicate the sleeves and create an intentional pattern smoothing (shift by half a beam step size and halving the dose)

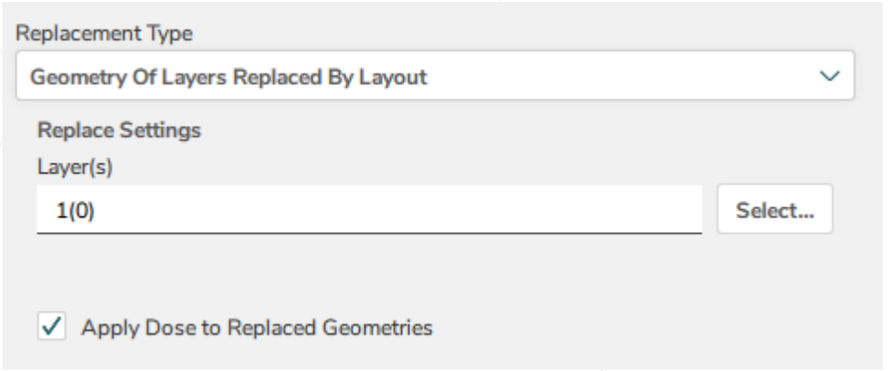
Layout operation

REPLACE inherits dose from placeholder

REPLACE can now inherit the dose information of the element it is replacing and apply it to the input pattern.



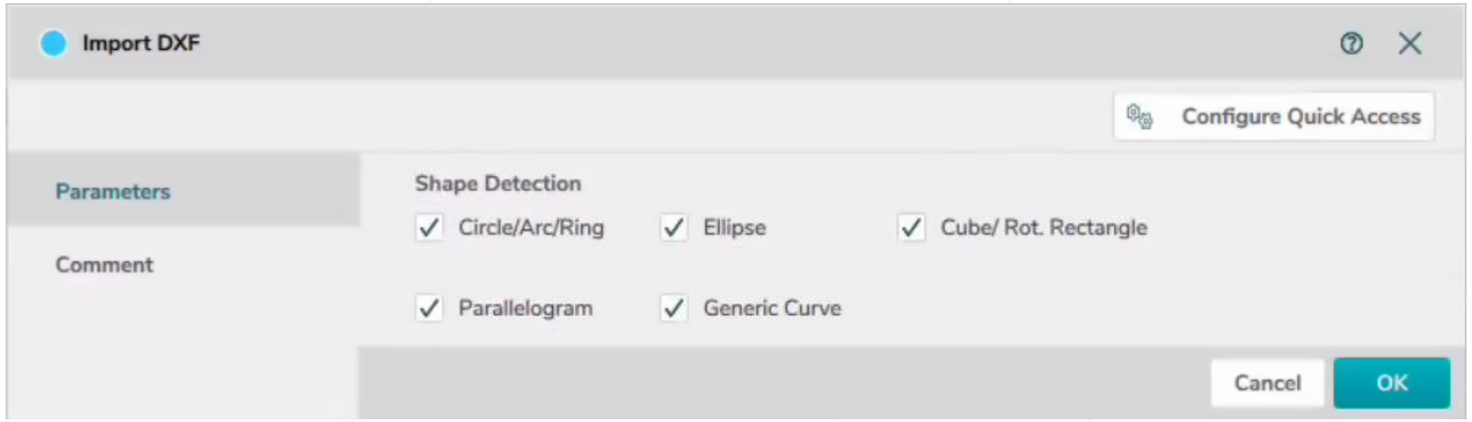


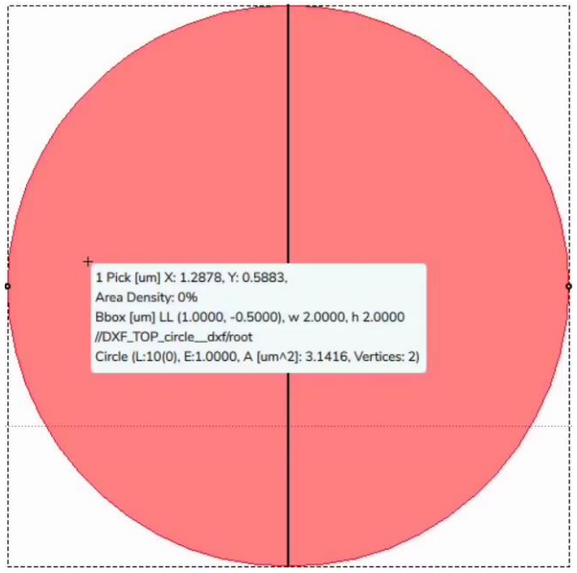


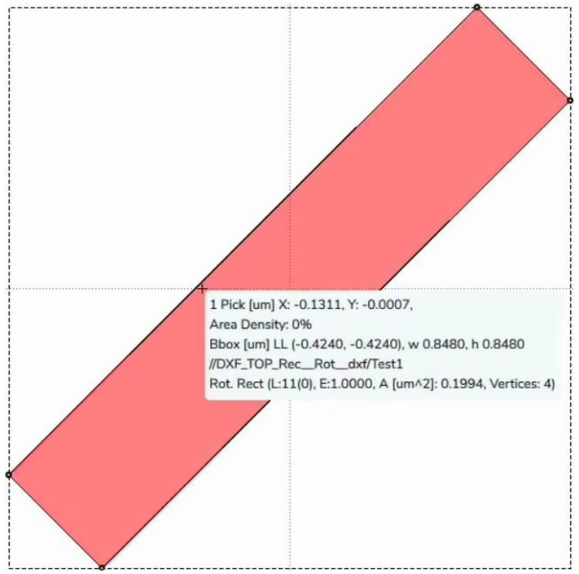
Shape detection DXF

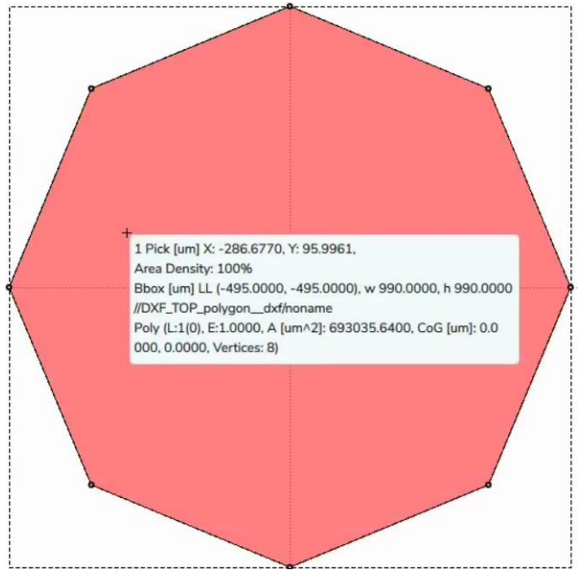
DXF Shapes

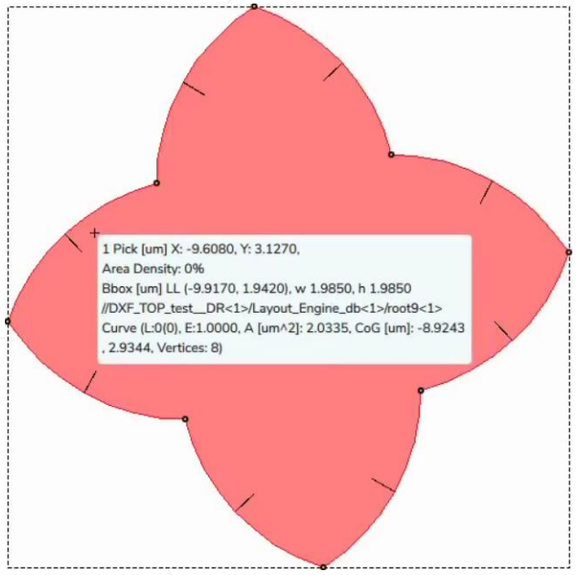
DXF format increases its import settings to detect special shapes: *Circles*, *Rings*, *Arcs*, *Ellipses*, *Rotated Rectangles*, *Parallelograms* and *Generic Curves*







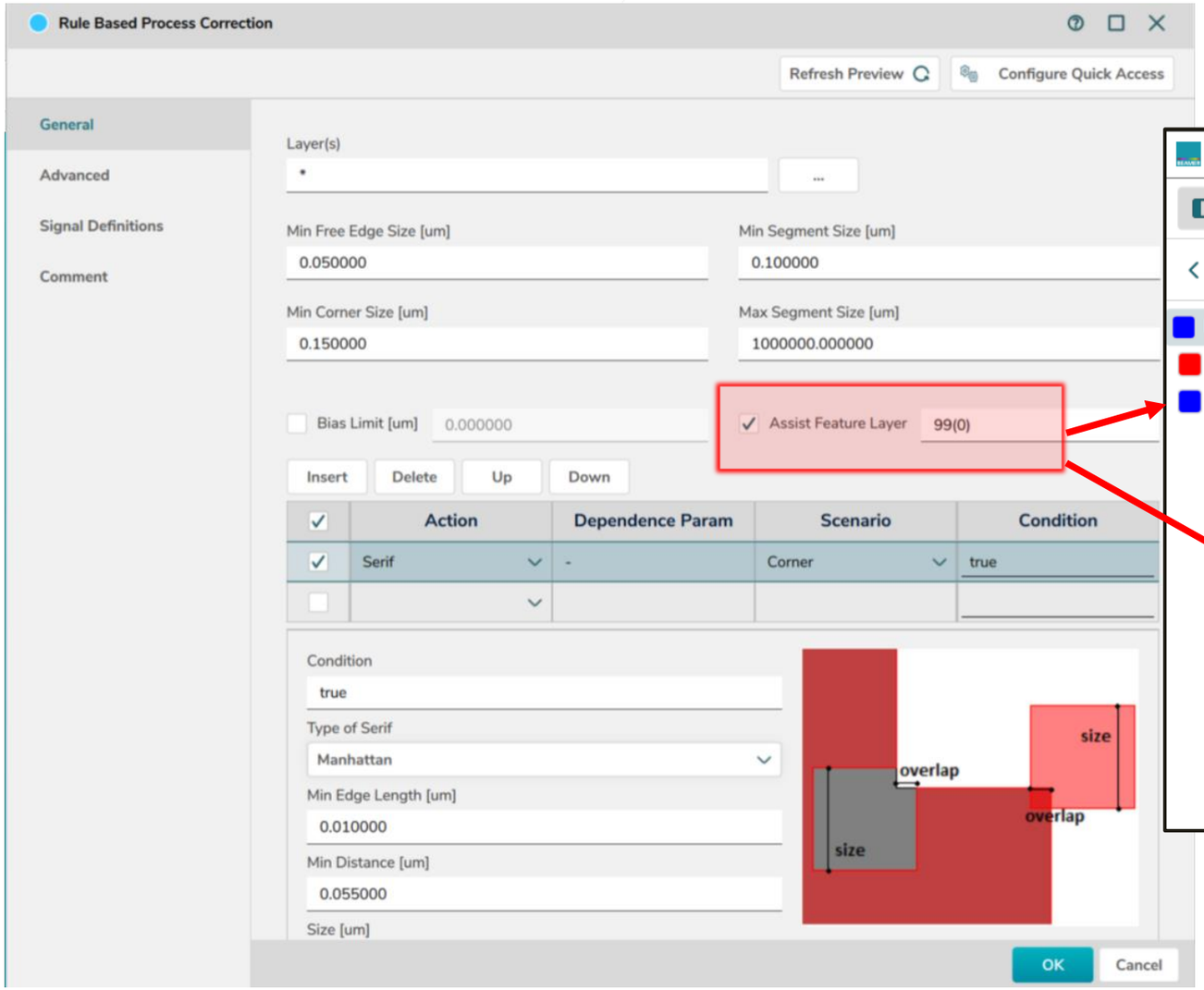


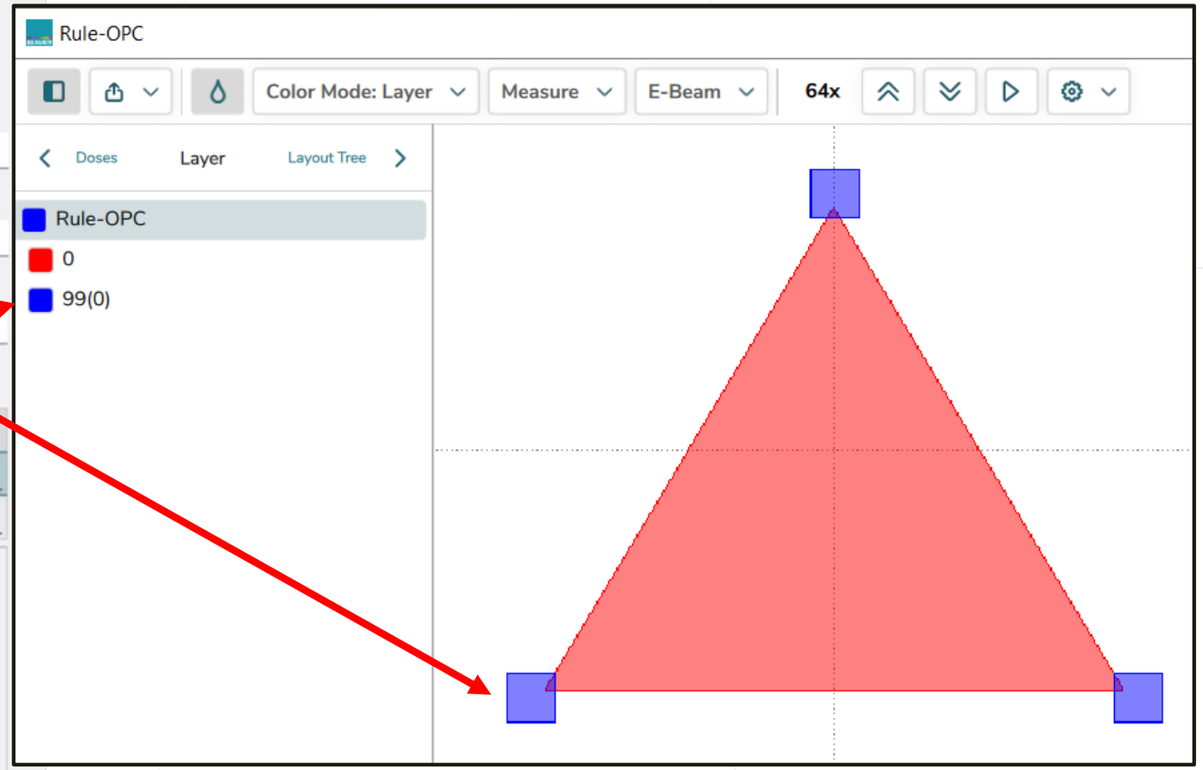


Rule-OPC

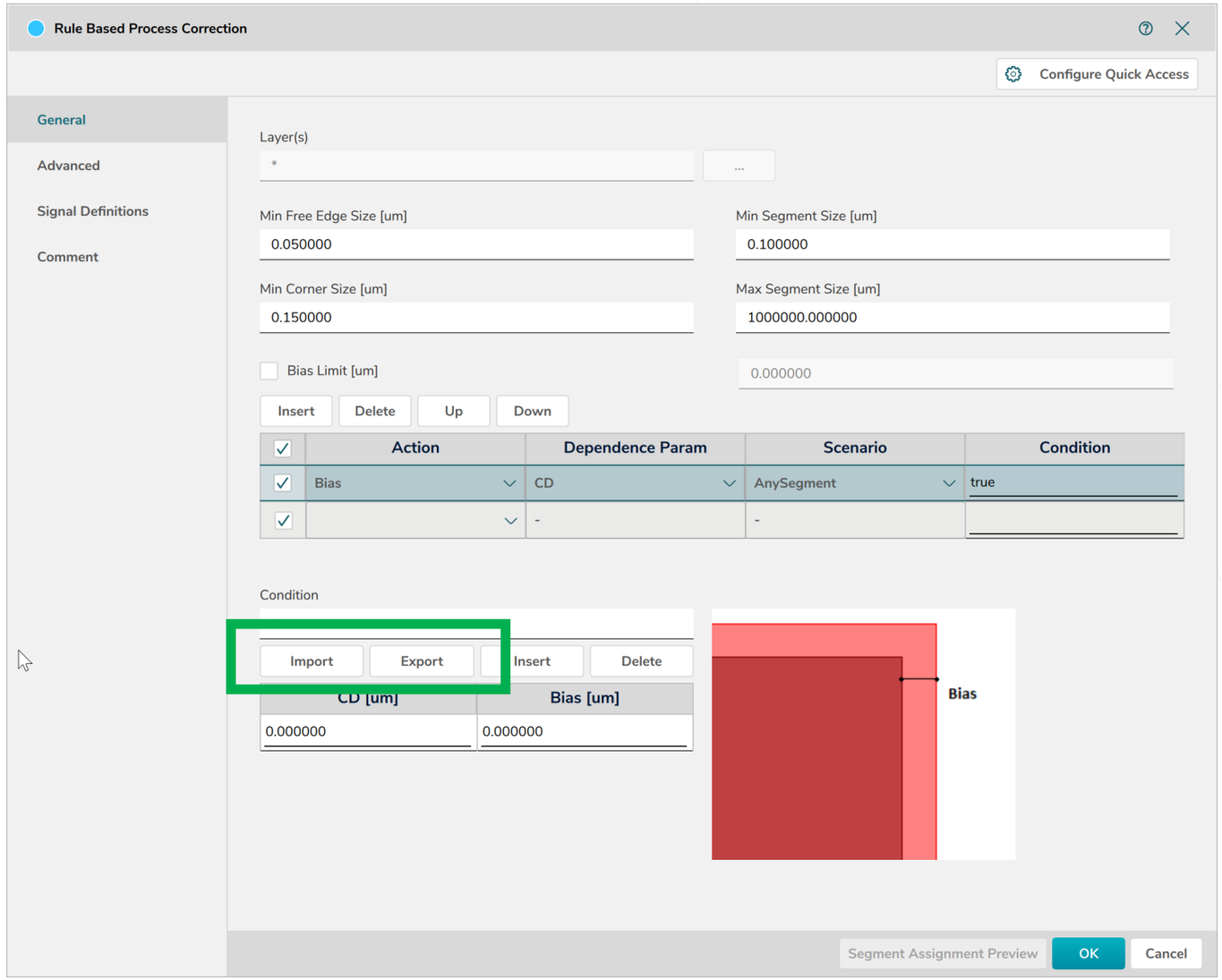
Rule OPC

- Rule-OPC can outputs the Assist Features (serifs,...) onto a separate layer





RuleOPC – Import/Export

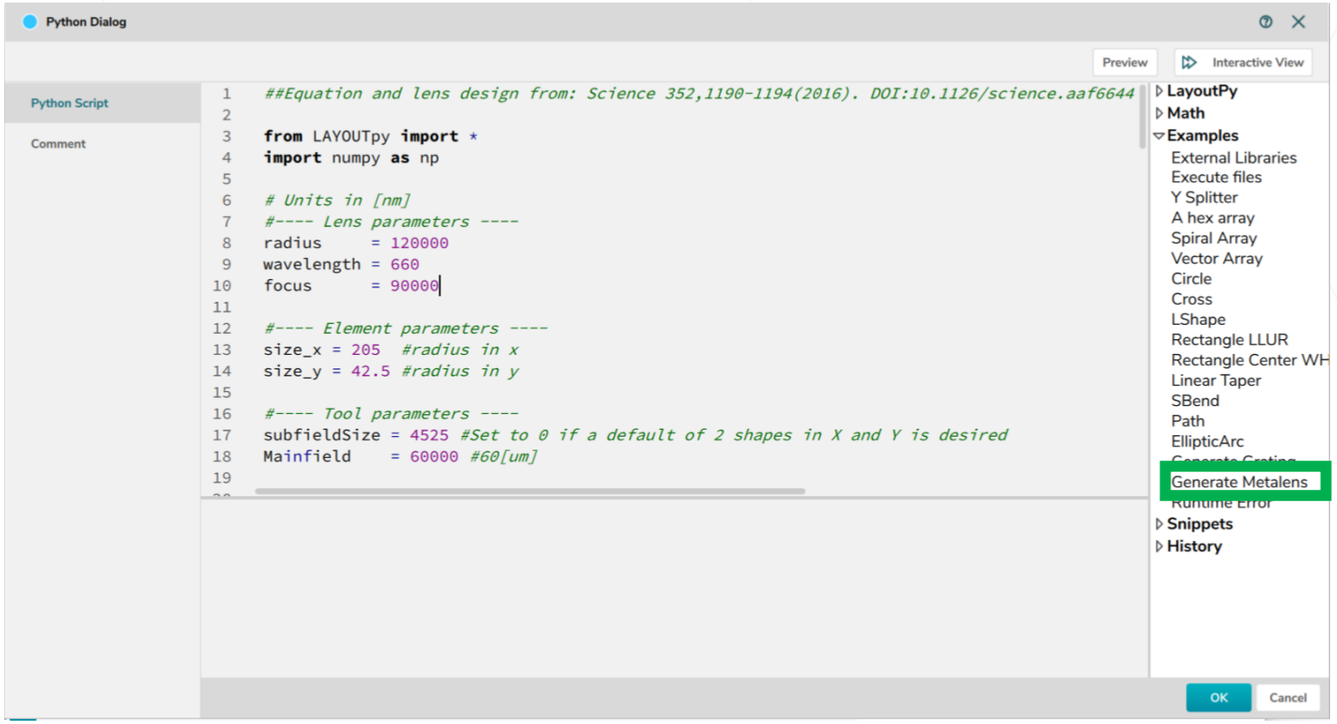


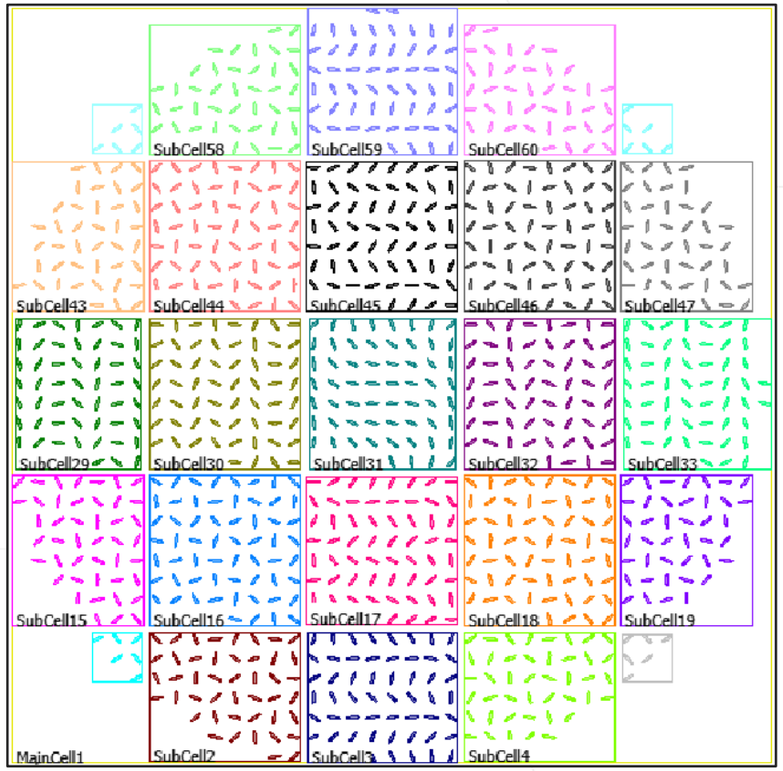
For easier rule setup an import/export option has been added for the CD dependend bias correction

LayoutPy examples

LayoutPy Metalenses

- LayoutPy includes a simple example to create Metalenses for a desired wavelength and focal length and with optimised Field and Subfield ordering





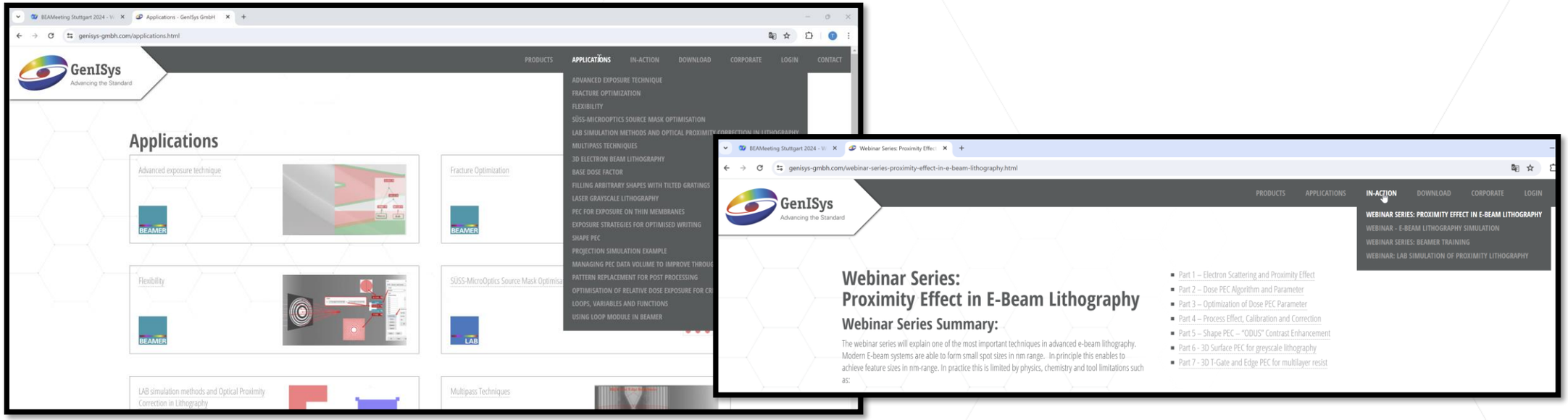
Usability

BEAMER 7.3

BEAMER 7.3

- Protected flow – read only
- Extend field placement options in fields module
- Extend python module with UI
- Extend QA options

BEAMER 7.3 release Jan 2025



BARTHEZ 2

BAR A TARTINES 1

Thank You!

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