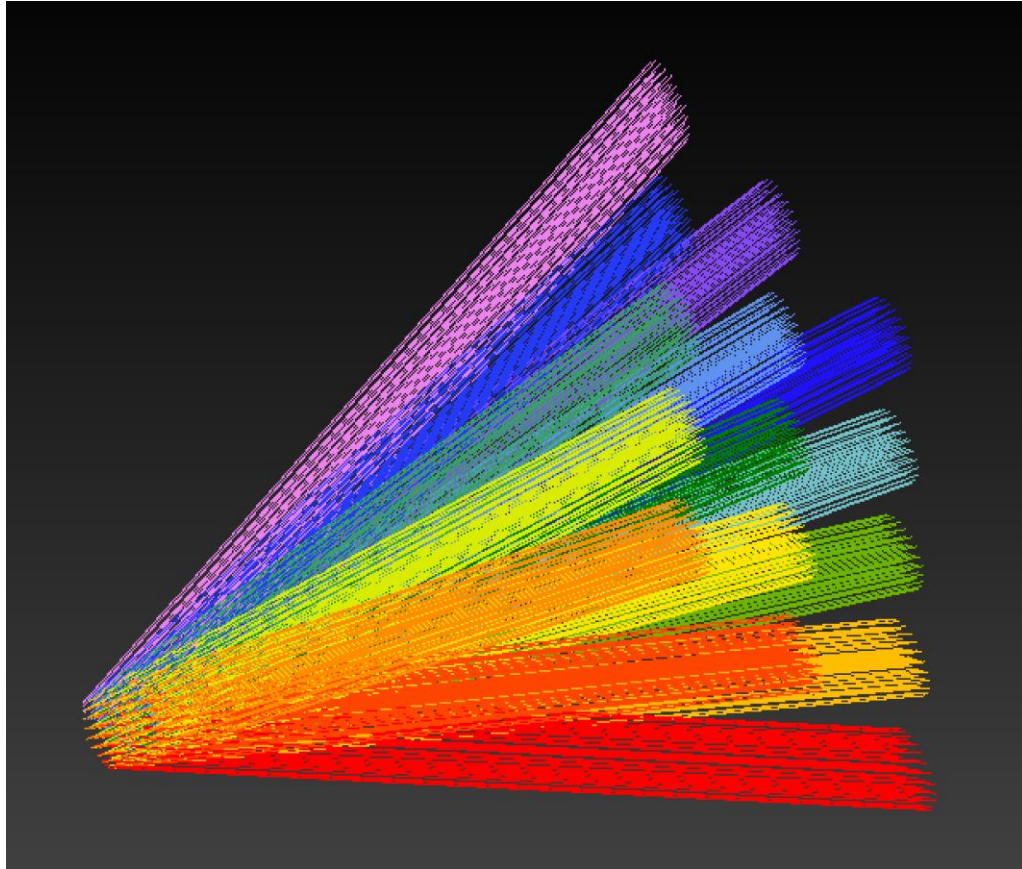


How to Set Up a Scanning Source

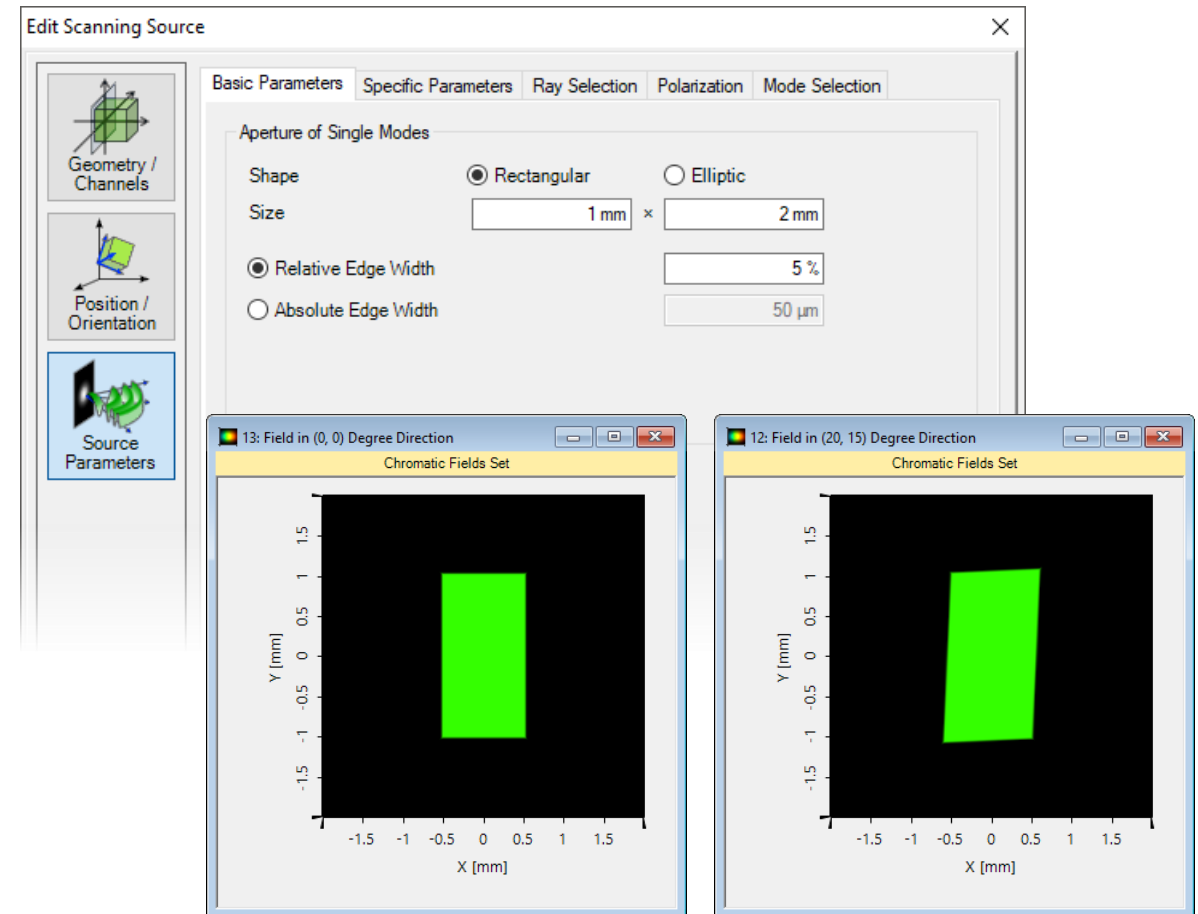
Abstract



With the scanning source in VirtualLab, it is possible to define a multi-mode source that radiates into different pre-defined directions. The scanning source can be used, e.g., in a laser scanning system for analyzing the performance under different scanning angle, or in an imaging system for modeling of certain field of view. Together with ParameterRun, the directions/angles can be scanned in different modes, and one can define it flexibly for specific applications.

Basic Parameters

- For each scanning angular direction, there is one mode representing the field.
- All modes share the same aperture shape and size (defined in the plane orthogonal to the mode direction), and these parameters can be configured in the *Basic Parameters* tab.
- Further, the relative or absolute edge width can be configured.

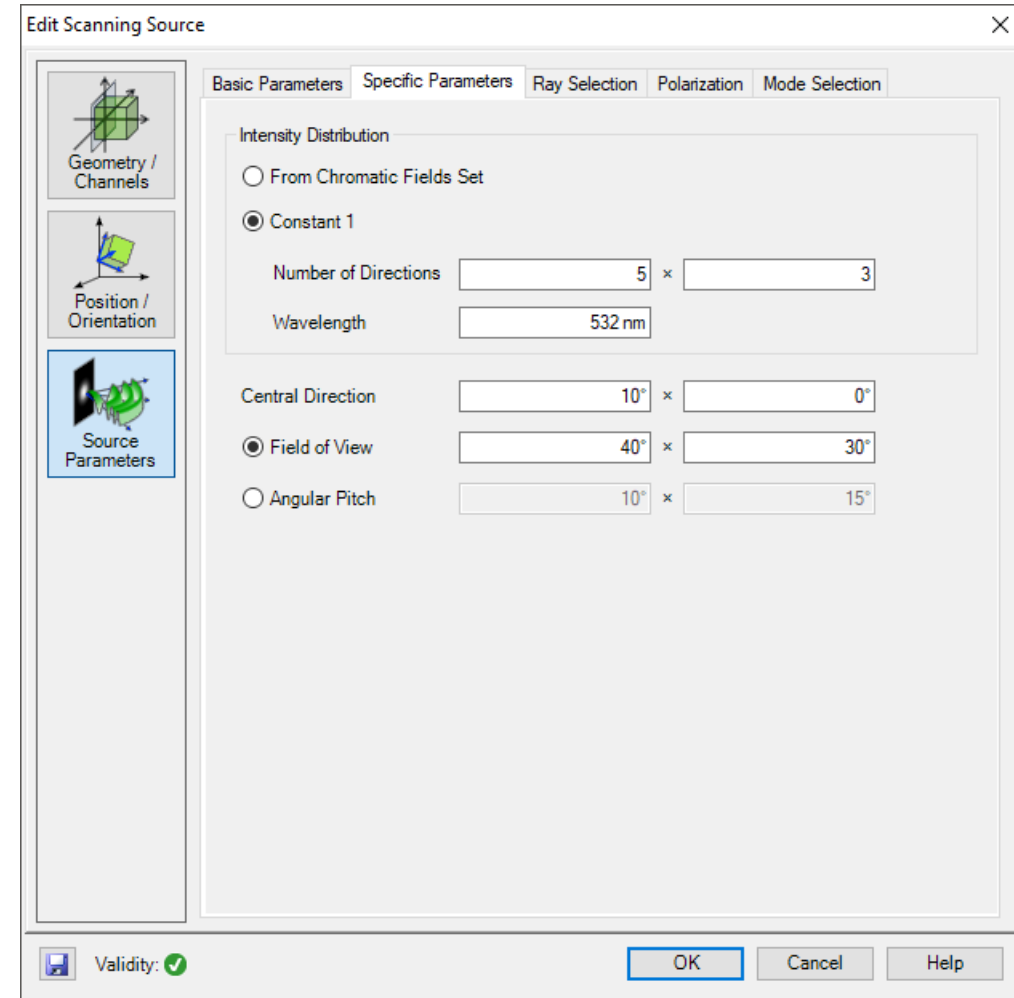


mode in $(0^\circ, 0^\circ)$ direction
on the input plane

mode in $(20^\circ, 15^\circ)$ direction
on the input plane

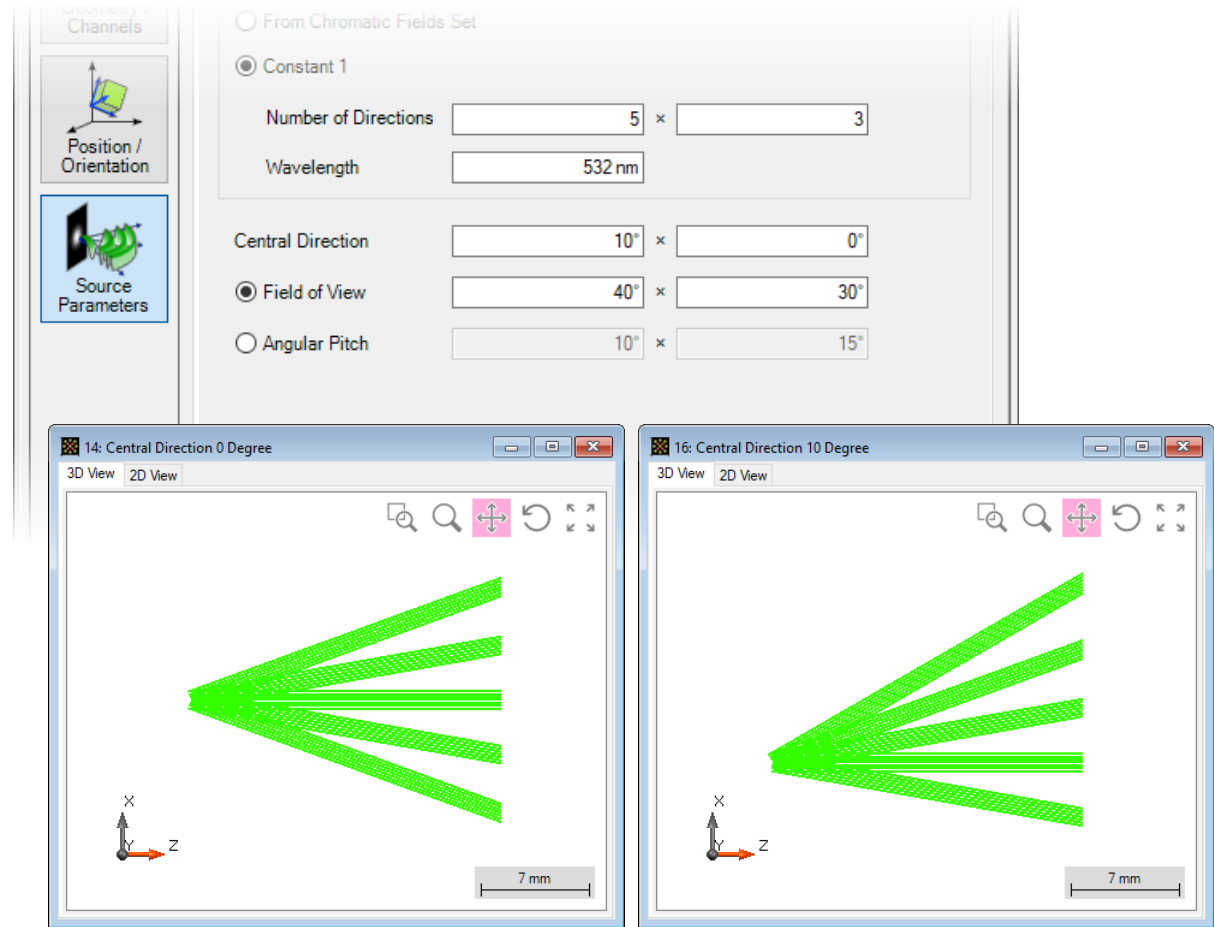
Specific Parameters – Intensity

- The *Specific Parameters* tab controls the **intensity** and angular settings of the source.
- The distribution of the intensity can be set according:
 - To a desired variation by specifying a Chromatic Fields Set, or by importing an image file. In this case, the wavelengths are chosen from the input.
 - Or constant over all scanning angles for one wavelength. In this case, the number of directions can be set, which means the number of scanning steps along x- and y-direction.



Specific Parameters – Angular Settings

- The *Specific Parameters* tab controls the intensity and **angular settings** of the source.
- You can set the *Central Direction*, i.e. the direction into which the center of the overall field propagates.
- The scanning range can be configured either by an specific *Field of View* or by the *Angular Pitch* of each scanning direction.

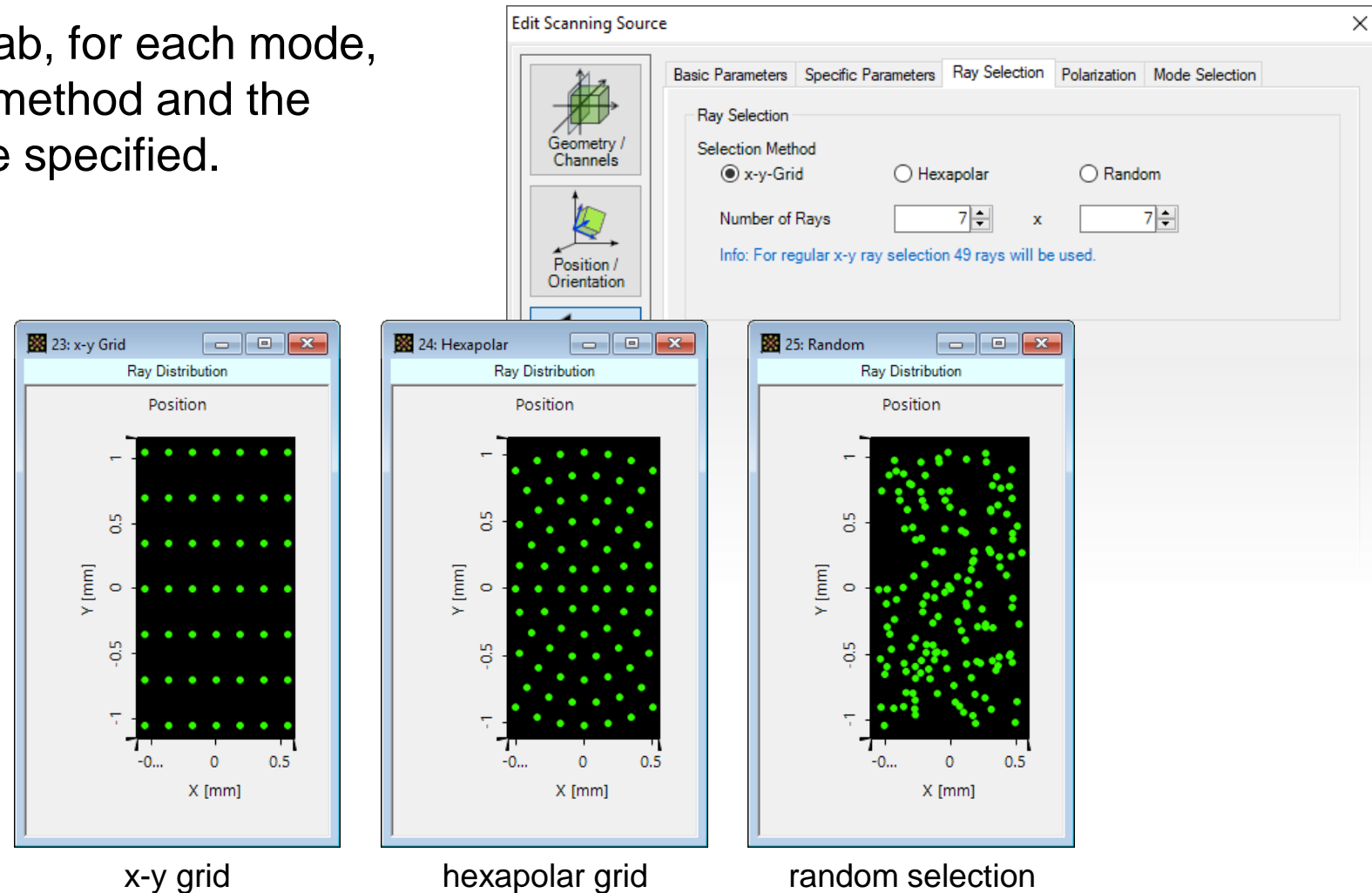


with field of view 40°
and central direction in 0°

with field of view 40°
and central direction in 10°

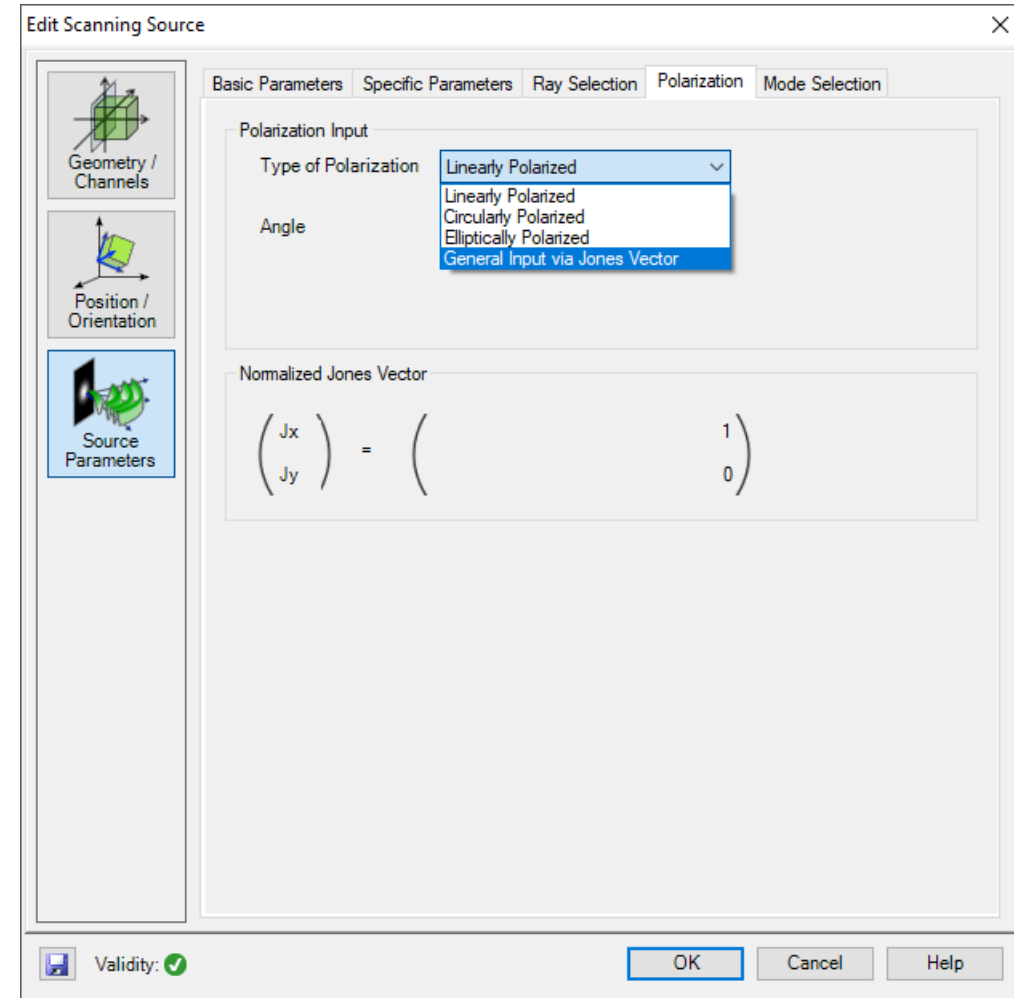
Ray Selection

- In the *Ray Selection* tab, for each mode, the desired selection method and the number of rays can be specified.



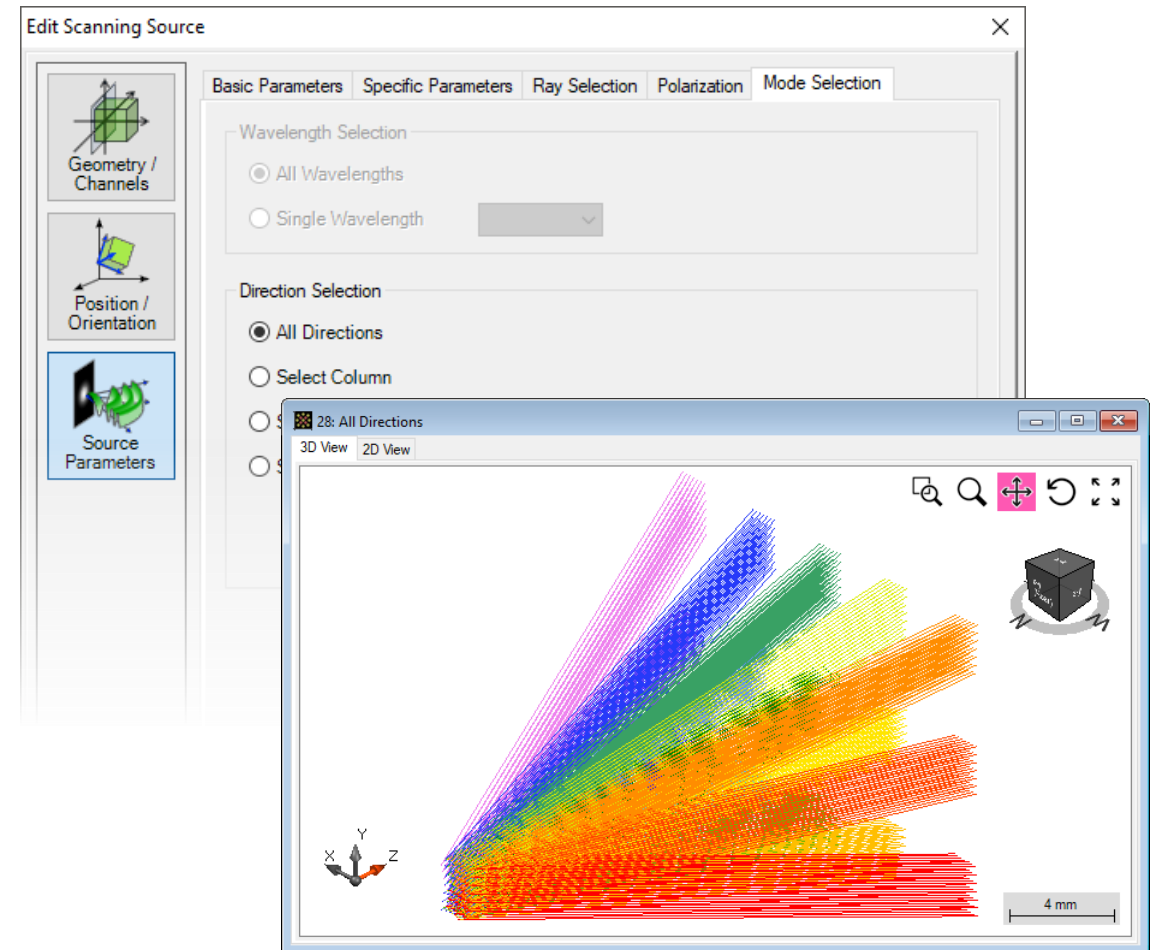
Polarization Settings

- The *Polarization Settings* tab provides the polarization options for all scanning directions.
- The polarization state can be:
 - linear;
 - circular;
 - elliptical;
 - general input via Jones matrix.



Mode Selection

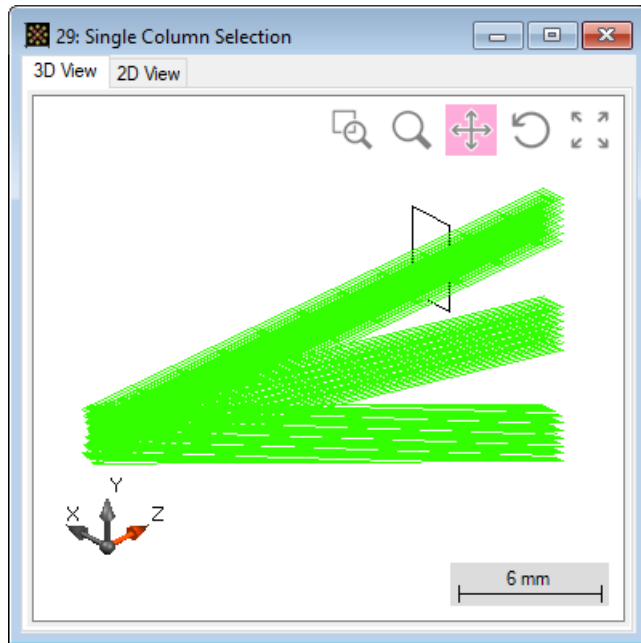
- In the *Mode Selection* tab, different possible spectral components and scanning directions can be selected.
- The wavelengths can be selected individually or all together.
- The scanning direction can be chosen within a specified column or row of angles, or can be chosen as a single direction.



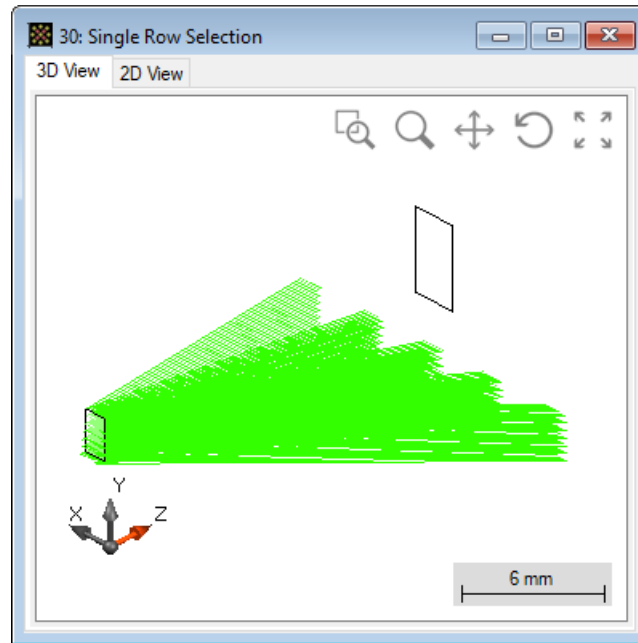
with all scanning directions

Mode Selection

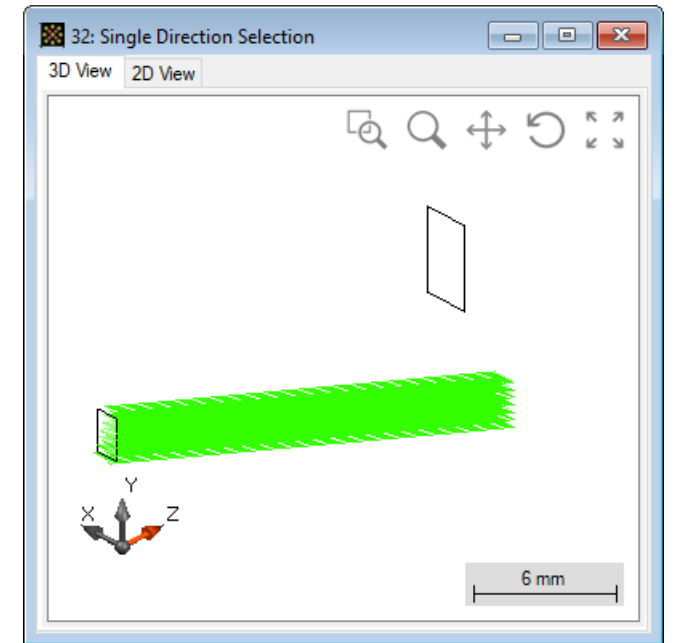
- Single column



- Single row

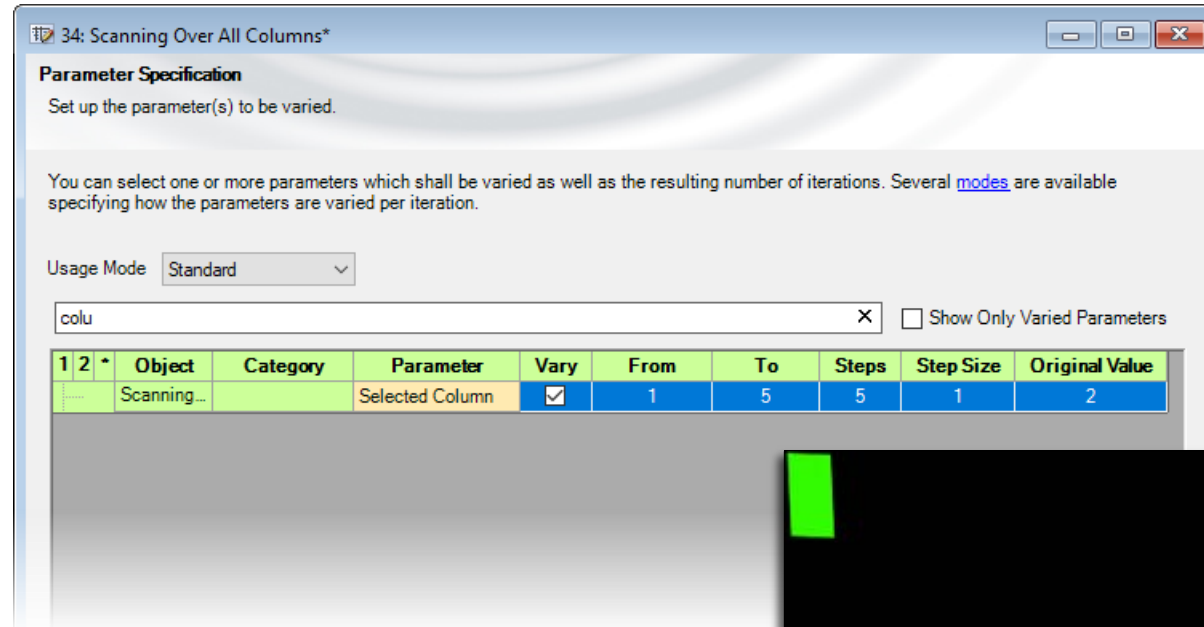


- Single direction



ParameterRun – Scanning over Columns / Rows

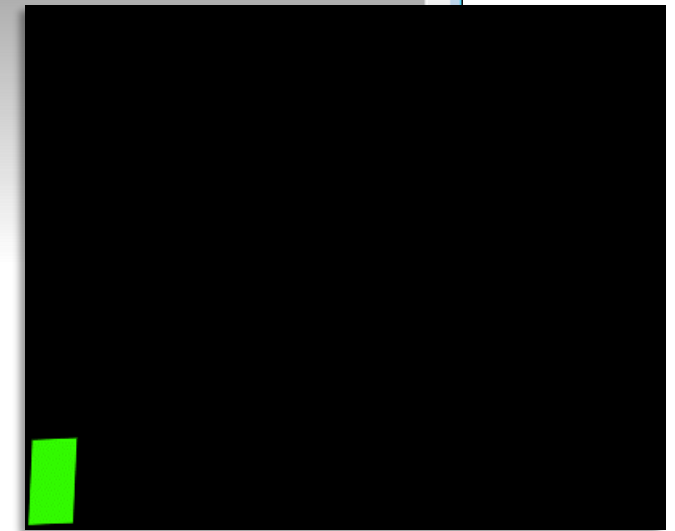
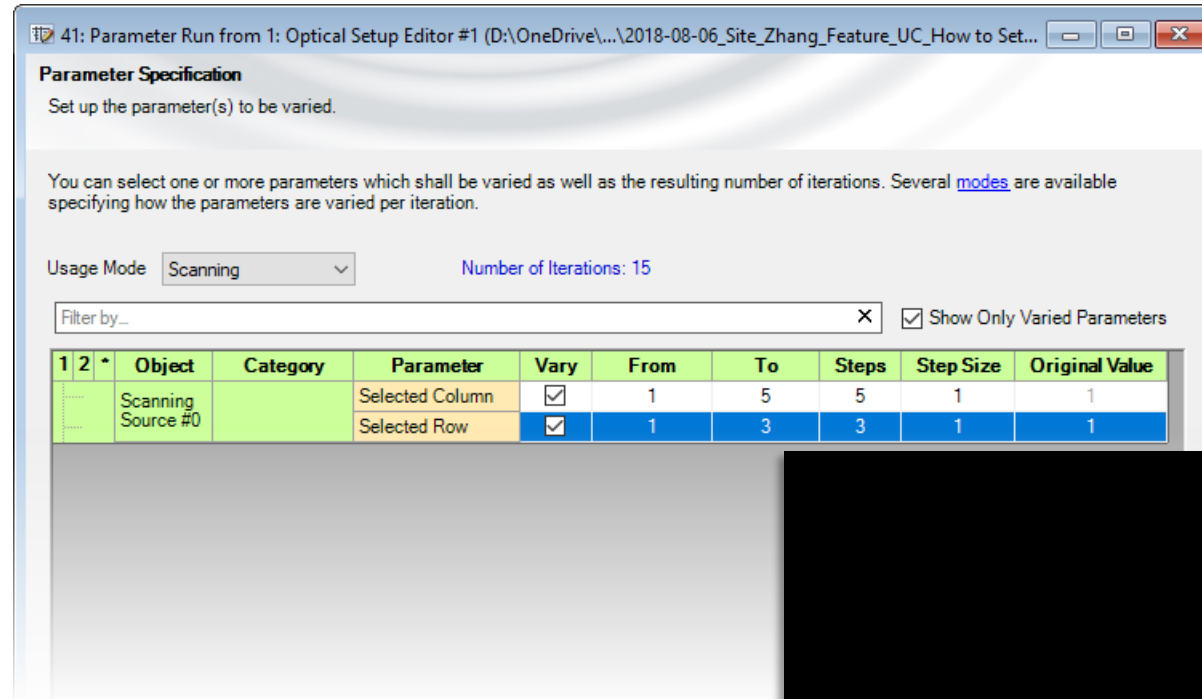
- In mode selection tab, check select column.
- Start ParameterRun and scan over selected column index.
- In a similar way, one can also scan over rows.



scanning animation from column 1 to 5

ParameterRun – Scanning over Each Single Direction

- In mode selection tab, check select direction.
- Start ParameterRun and switch to scanning mode. Then scan over selected column and row indices.



scanning animation over all directions

Document Information

title	How to Set Up a Scanning Source
document code	0107
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toolbox(es)	Starter Toolbox
VL version used for simulations	7.4.0.40
category	Feature Use Case
