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.
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.
Ray Selection

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