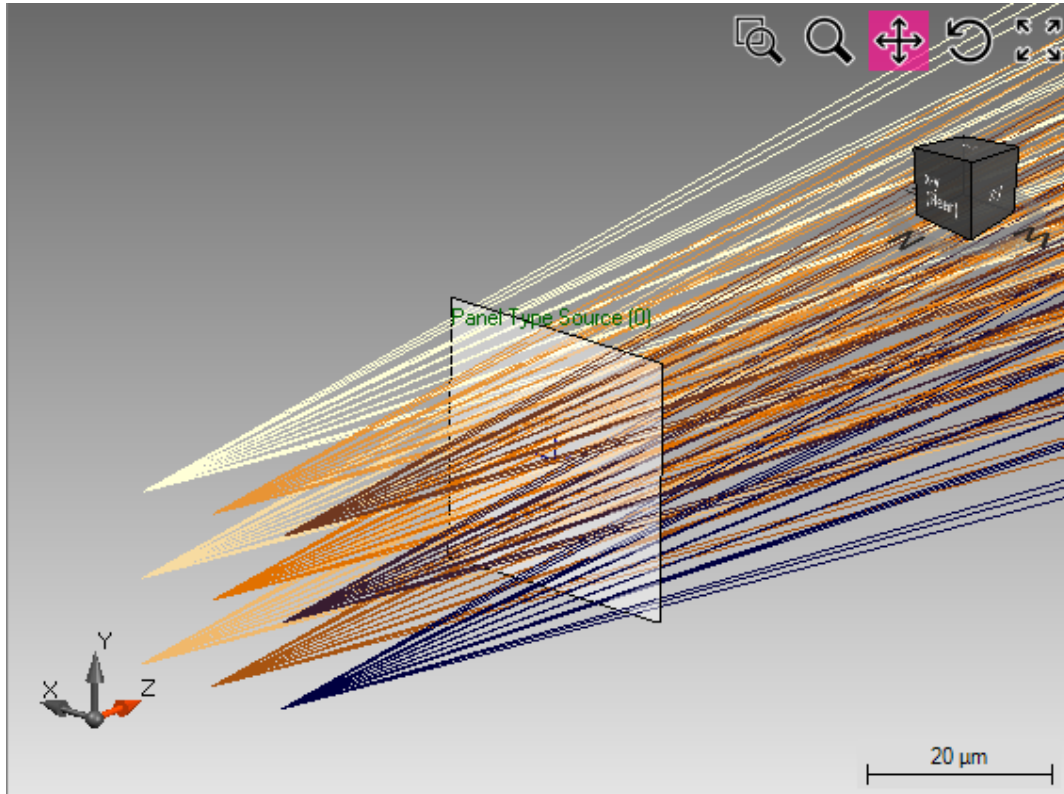


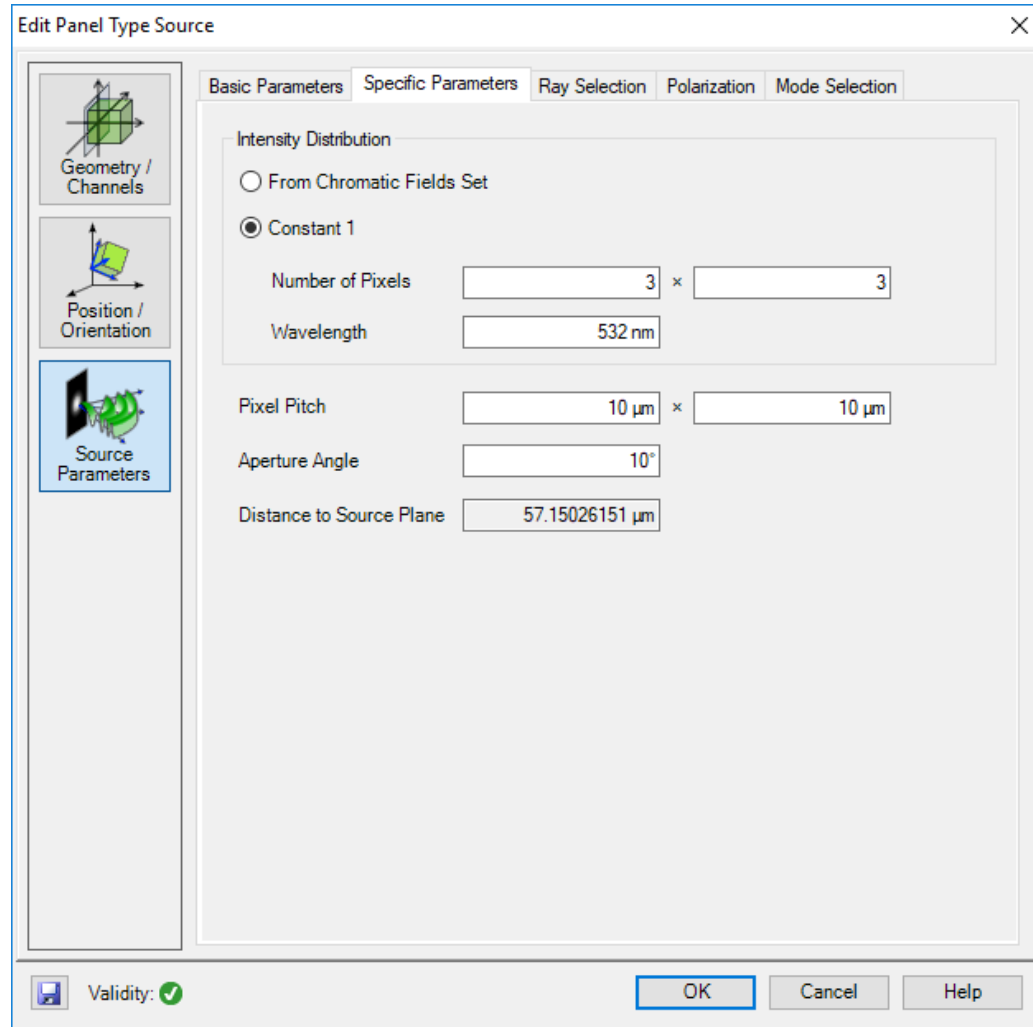
# **Overview Lateral Distributed Sources in VirtualLab Fusion**

# Abstract

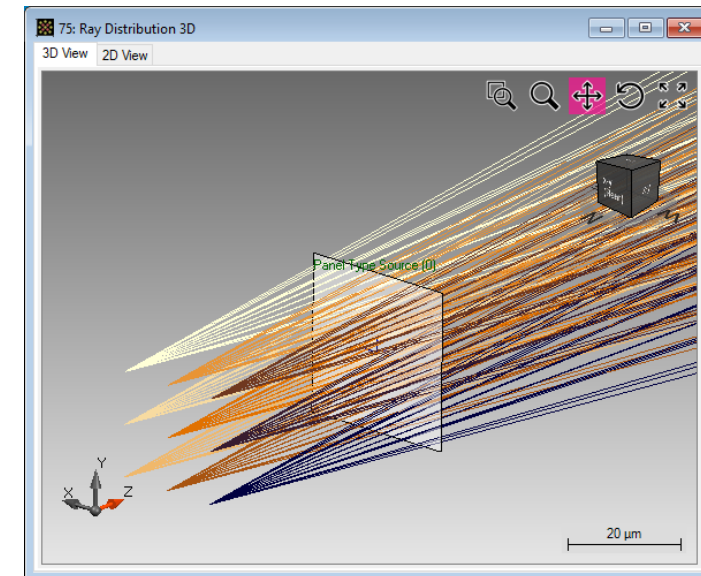


In numerous optical applications, laterally extended sources are used for the illumination. VirtualLab provides very different options to model such complex sources. In this document, a brief overview is given.

# Panel-Type Source (spherical waves)



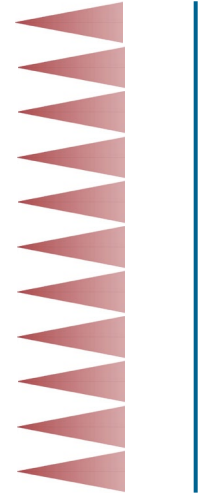
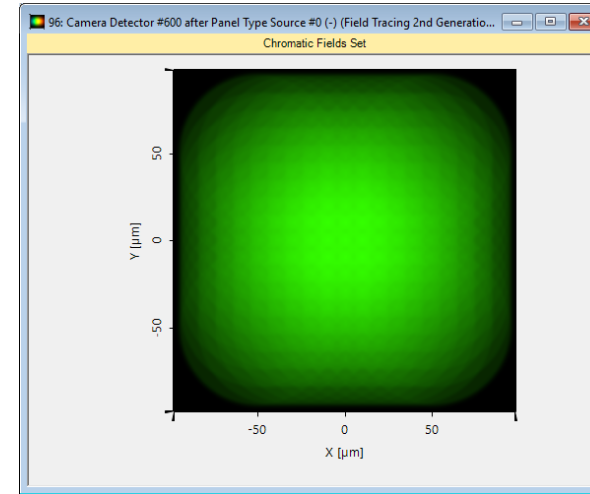
- In the Panel-Type Source a uniform grid can be defined, where each point emits a spherical wave with a certain aperture
- E.g. 3x3 spherical waves are used (illustrated by different colors)



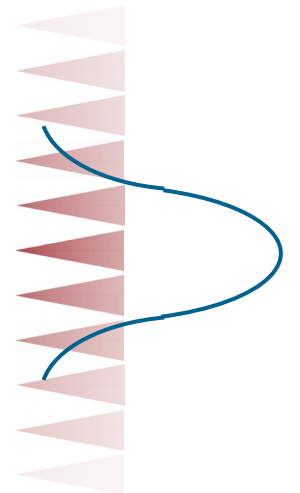
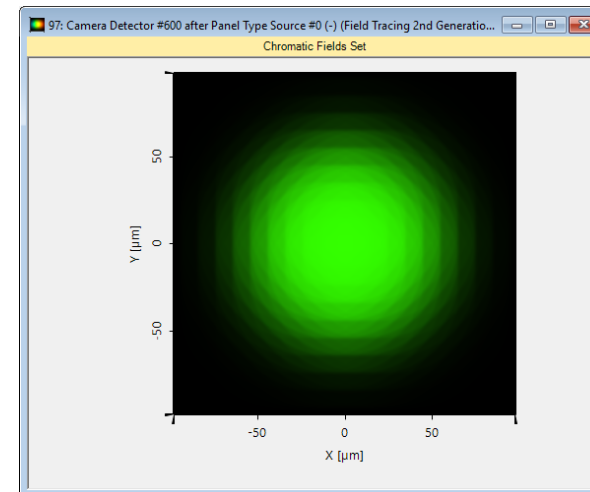
# Panel-Type Source (spherical waves)

- The weights (amplitudes of the spherical waves) of the overall intensity distribution can be e.g. uniform or any kind of desired distribution (e.g. Gaussian)
- Exemplarily, a distribution of  $11 \times 11$  point sources with a uniform and a Gaussian profile is shown.

uniform distribution:



Gaussian distribution:



# Gaussian Type Planar Source (Gaussian waves)

Edit Gaussian Type Planar Source

Basic Parameters | Spectral Parameters | Spatial Parameters

Polarization | Mode Selection | Sampling | Ray Selection

Definition of Lateral Modes

Definition Strategy: Uniform 2D Grid

Lateral Level (max: 15): 1

Initial Grid Size: ☒ Automatic ☐ Manual

Weight Function

Specification Type: ☒ Constant Weight ☐ User-Defined Weight

Weight Value: 1

Selection of Active Modes

Selection Strategy: Full Set of Spectral and Lateral Modes

Number of Spectral Modes (max: 1): 1

Number of Lateral Modes (max: 9): 9

Number of Active Modes

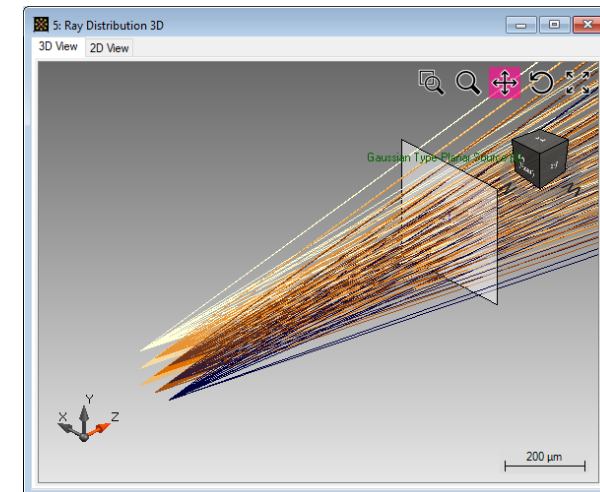
Number of Lateral Modes: 3

Number of Spectral Modes: 1

Total Number of Modes: 9

Default Parameter Ok Cancel Help

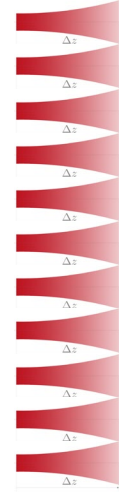
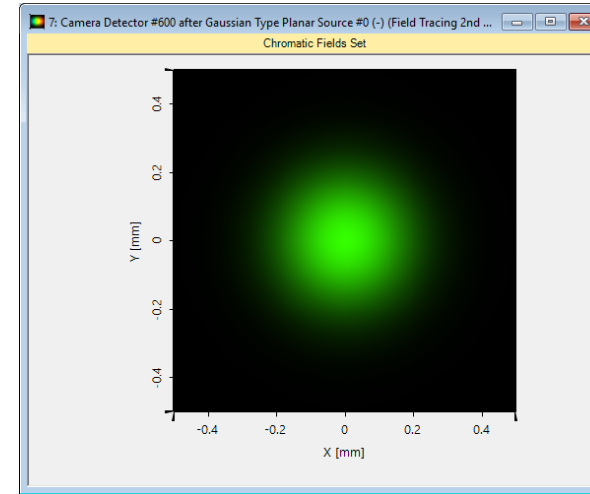
- The Gaussian Type Planar Source emits different grids of weighted Gaussian beams.
- The following grid types are available:
  - Uniform
  - Random
  - Customized (programmable positions)
- E.g. 3x3 Gaussian beams are used (illustrated by different colors)



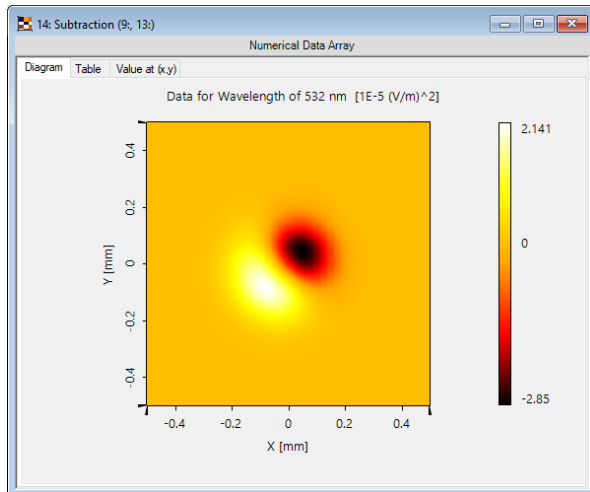
# Gaussian Type Planar Source (Gaussian waves)

- Exemplarily, a distribution of  $11 \times 11$  Gaussian sources with uniform and random position grid is shown.

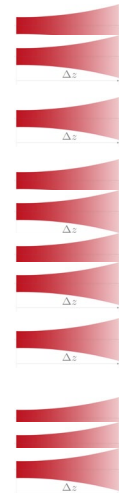
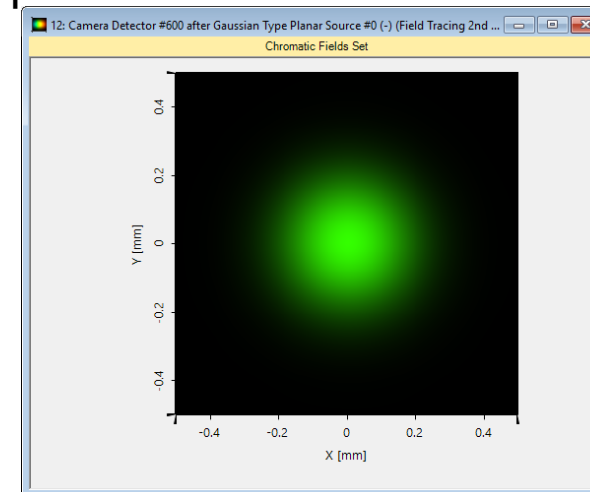
uniform position grid:



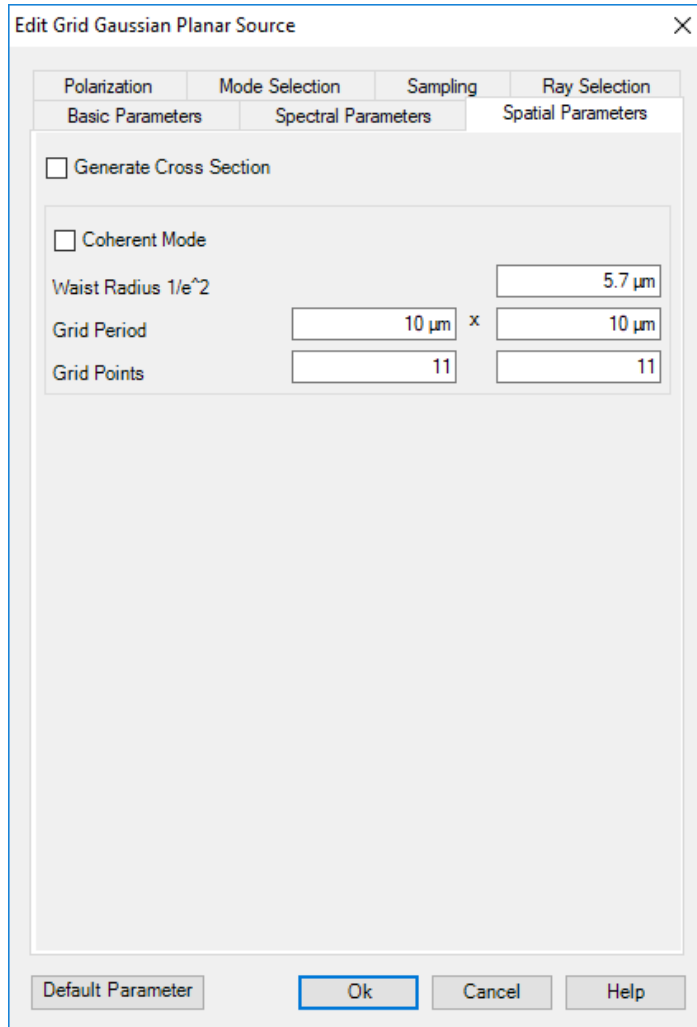
subtraction



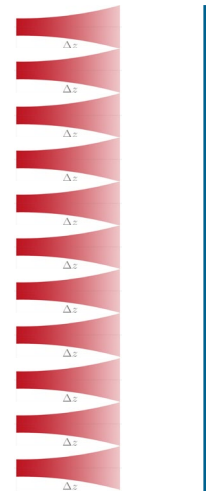
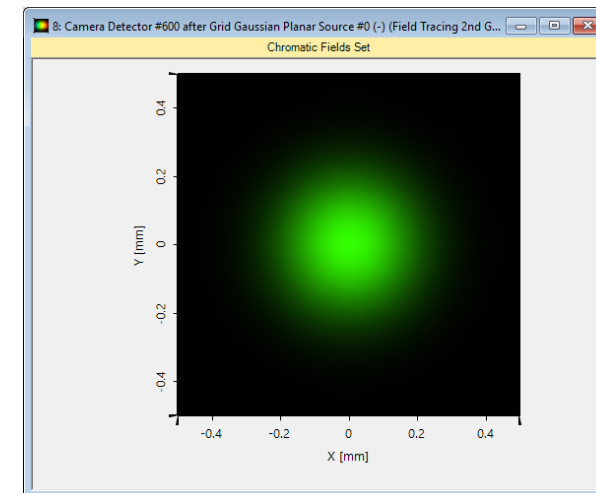
random positions:



# Alternative: Grid Gaussian Planar Source (Gaussian waves)



- The Grid Gaussian Planar Source emits a uniform grids of identical Gaussian beams.
- The following grid types are available:
  - Uniform
  - Random
  - Customized (programmable positions)
- Exemplarily, a distribution of 11×11 Gaussian with uniform position grid is shown.



# Document Information

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title	Overview Lateral Distributed Sources in VirtualLab Fusion
document code	Demo.0005
version	1.0
VL version used for simulations	VirtualLab Fusion Summer Release 2019 (7.6.1.18)
category	Demo
further reading	<ul style="list-style-type: none"><li>- <a href="#">How to Work with the Programmable Light Source in VirtualLab Fusion and Example (Gaussian Beam)</a></li><li>- <a href="#">How to Set Up a Panel-Type Source</a></li></ul>

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