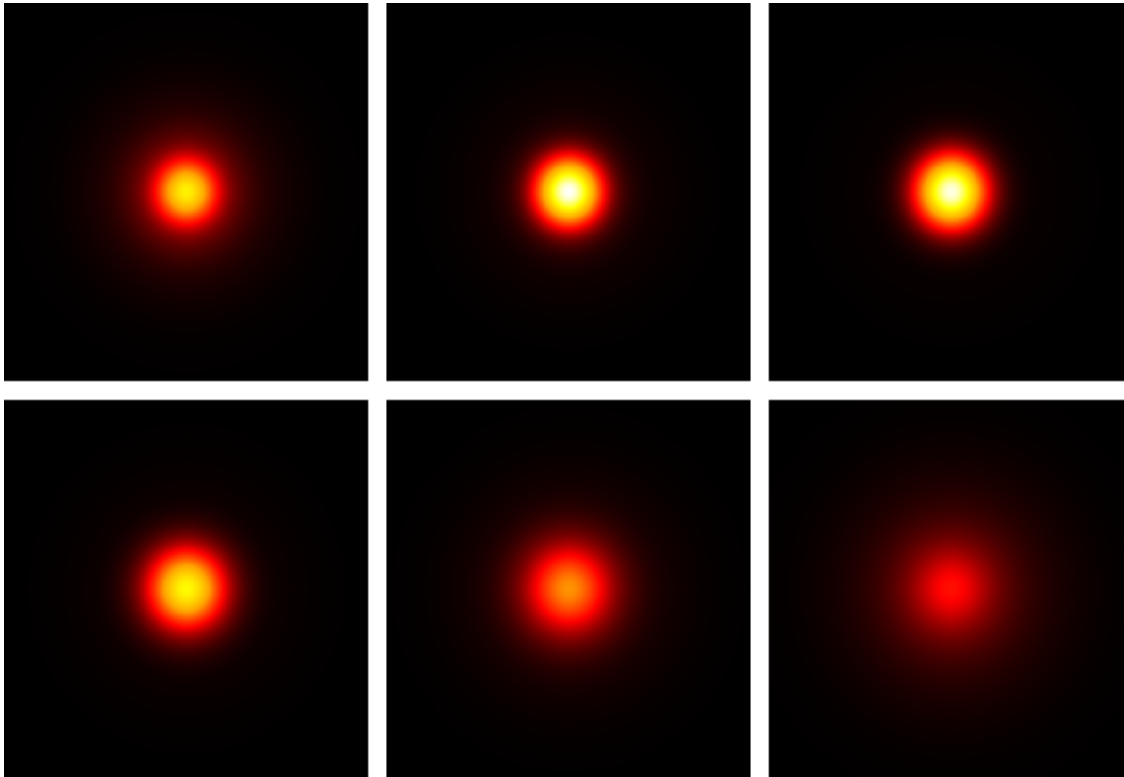


Create Animations and Overview Images from Parameter Sweep

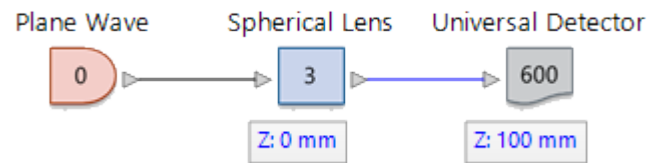
Abstract



Parameter Sweeps are a common tool to calculate the change of the result depending on the variation of a certain physical quantity. With the Animation document, VirtualLab Fusions offers a flexible tool to visualize such kind of sweeps in-software. For applications like papers, reports and documentations however, it is highly practical to depict the animations in a static and/or printable way. For such cases, the user can use the Overview Image feature to easily transform animations to static pictures while still demonstrating the overall variation.

This Use Case Shows ...

... how to visualize the effects of a varied parameter in a single picture with the help of the *Overview Image* and *Animations*.

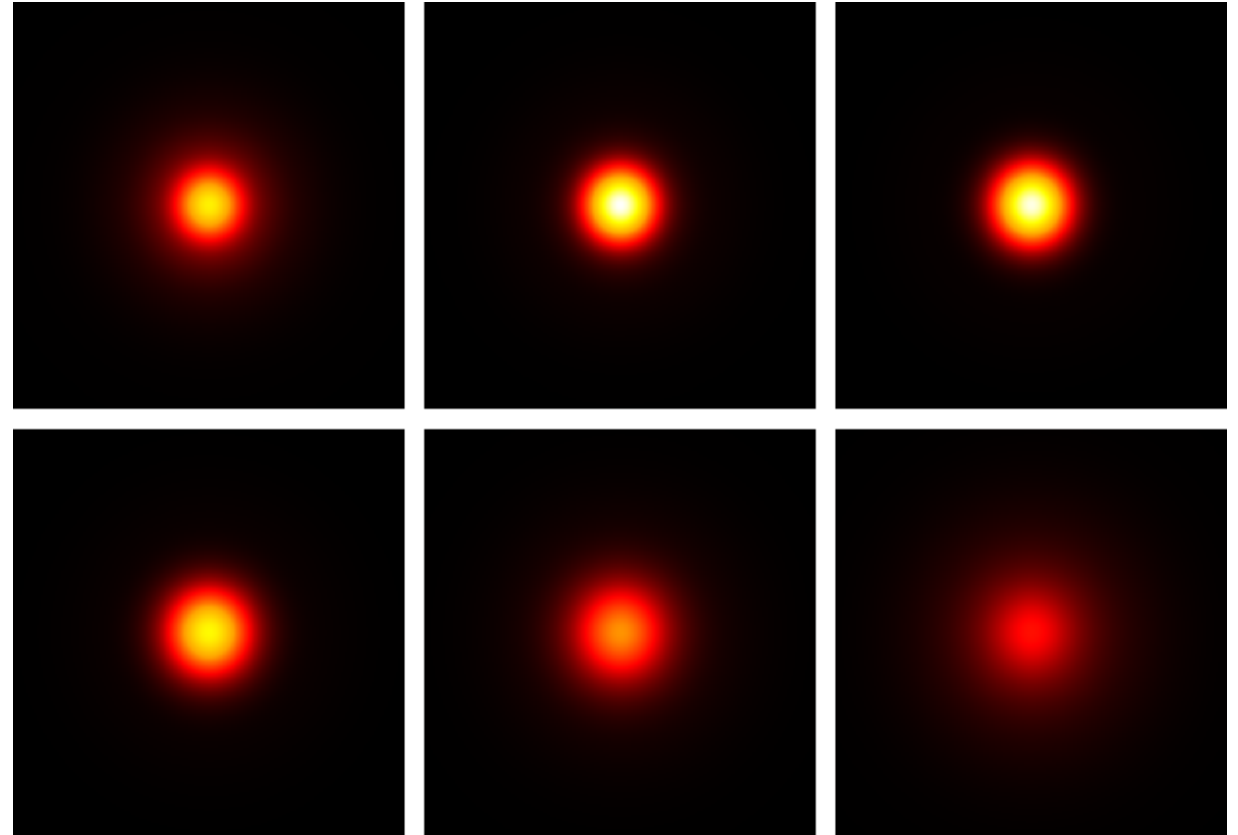


spherical lens

- focal length
100 mm

varying parameter:

position of the detector along the optical axis
(from 92mm – 112mm in 6 steps)



Generate an Animation with a Parameter Run

Optical Setup

Profile Editing & Run Layout Tools

Modeling Analyzer Pre-Selected Configuration Light Path Finder Source to Component: State = N/A Cost Function **New Parameter Run** New Parametric Optimization Vi Sys Vi

1

28: D:\Dokumente\...\Demonstration Example.run

Results

Start the parameter run and analyze its results

Go! Local Execution (Parallel Iterations: 8)

☒ Use Already Calculated Results for Next Run

Detector	Subdetector	Combined Output	Iteration Step		
			1	2	
Varied Parameters	Distance Before ("Universal	Data Array	92 mm	96 mm	
"Universal Detector" (# 600...	Irradiance	Animation	Chromatic Fields Set	Chromatic Fields Set	Chromatic

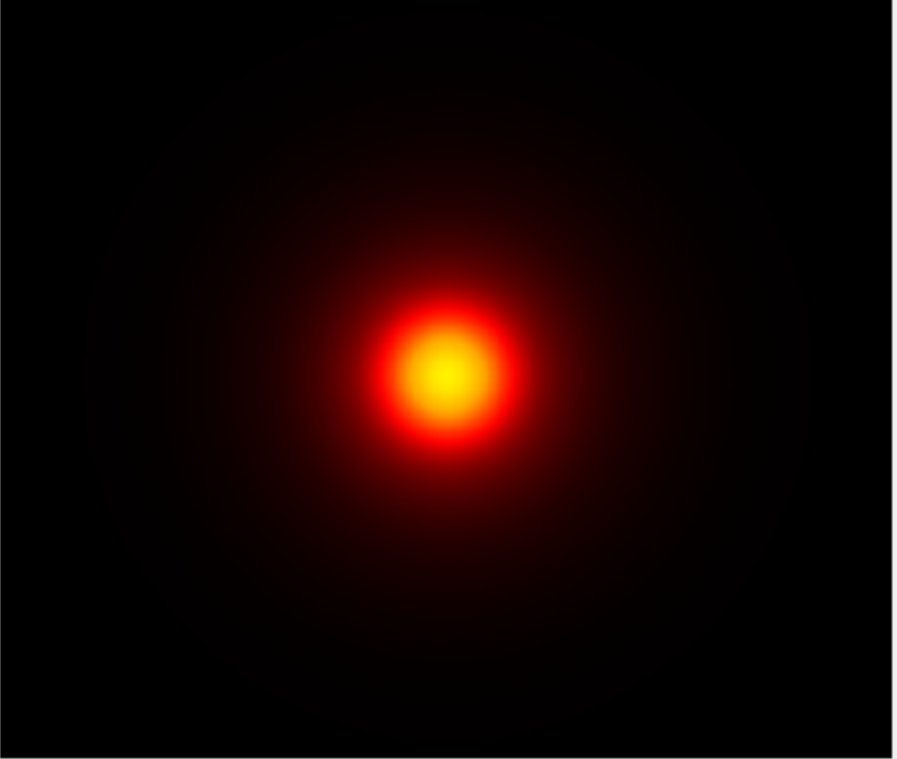
2

Create Output from Selection Filter Rows by...

< Back Next > Show ▾

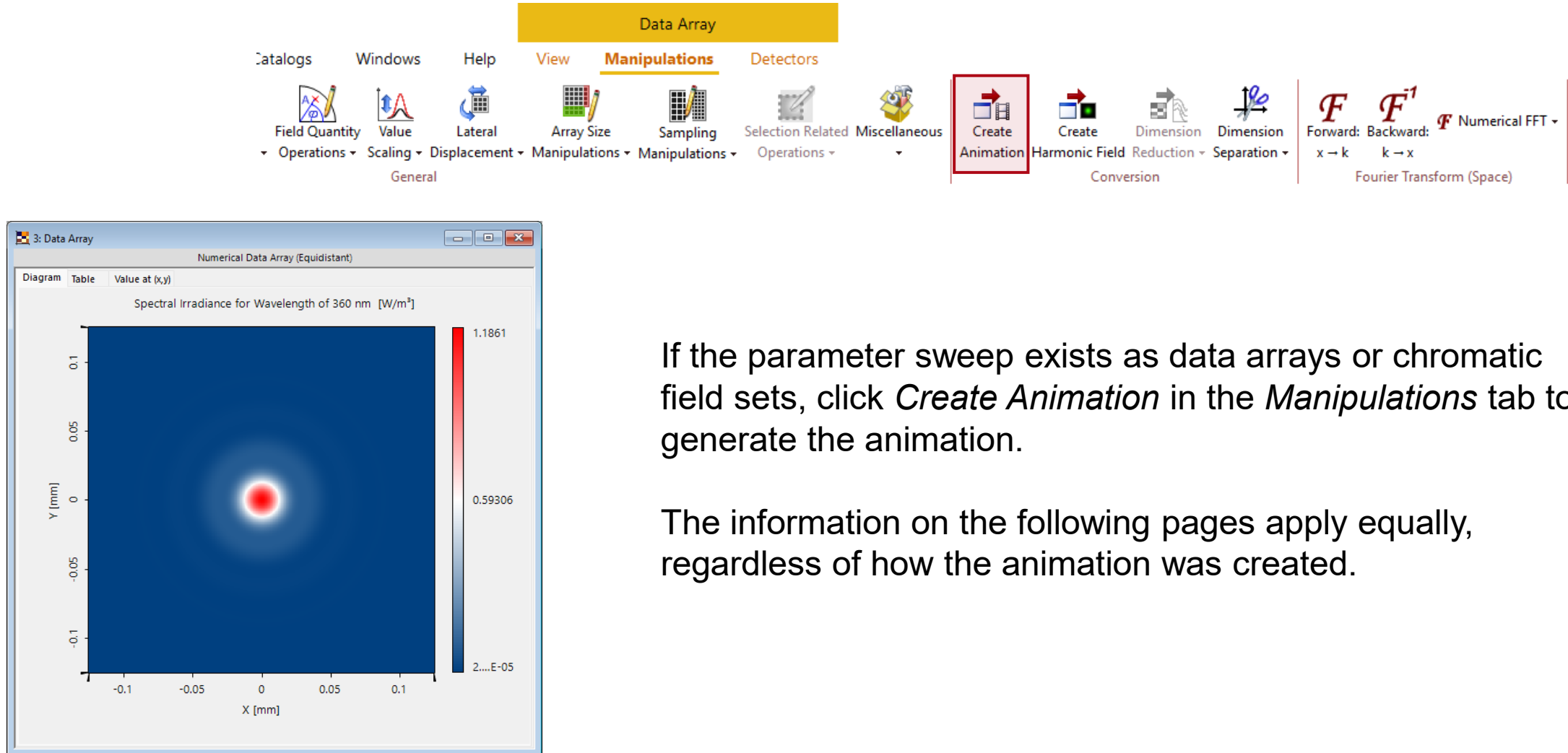
3

29: Irradiance – "Universal Detector" (# 600): Irr...



Frame 1/6

Create Animation from a Set of Data Arrays

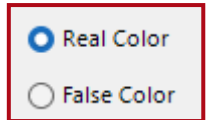
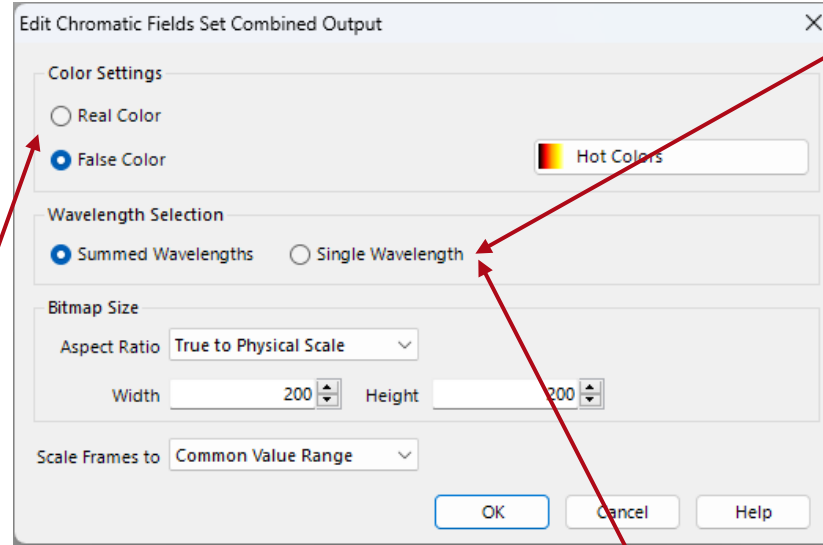
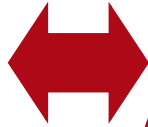
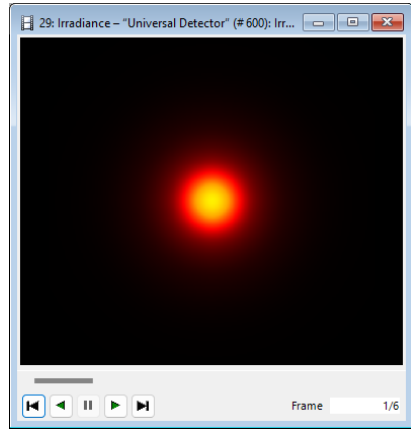


If the parameter sweep exists as data arrays or chromatic field sets, click *Create Animation* in the *Manipulations* tab to generate the animation.

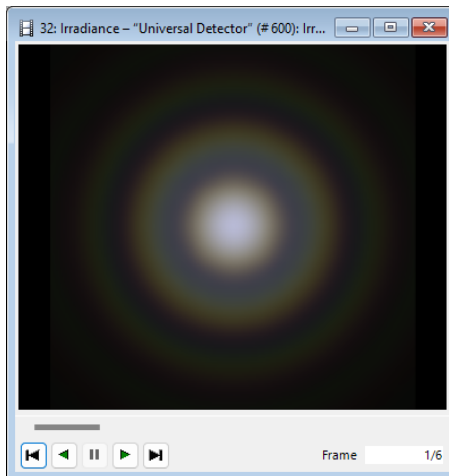
The information on the following pages apply equally, regardless of how the animation was created.

Animation Output: Color and Wavelength

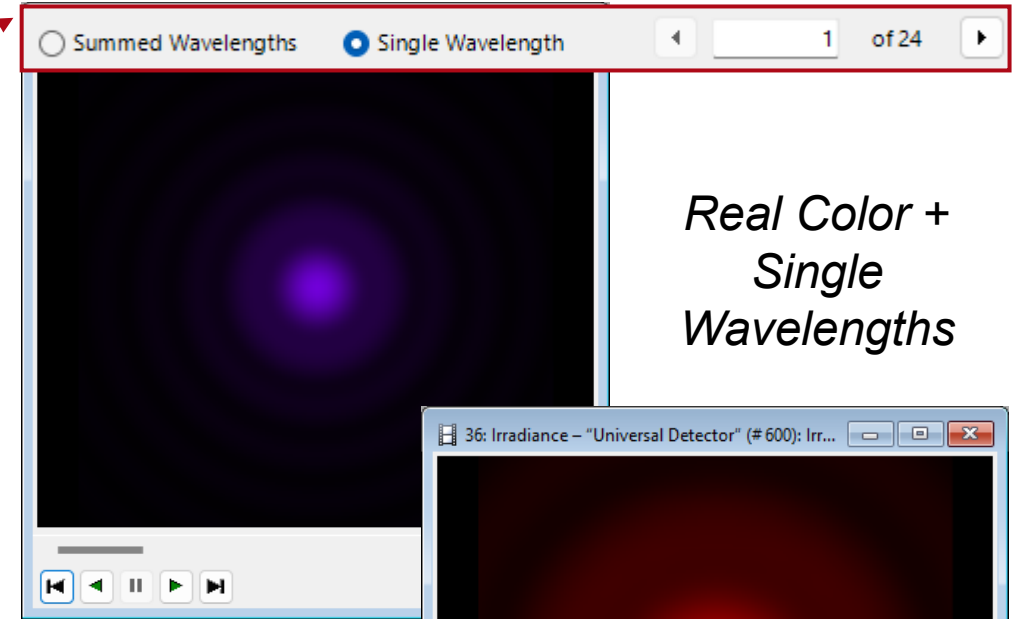
reference



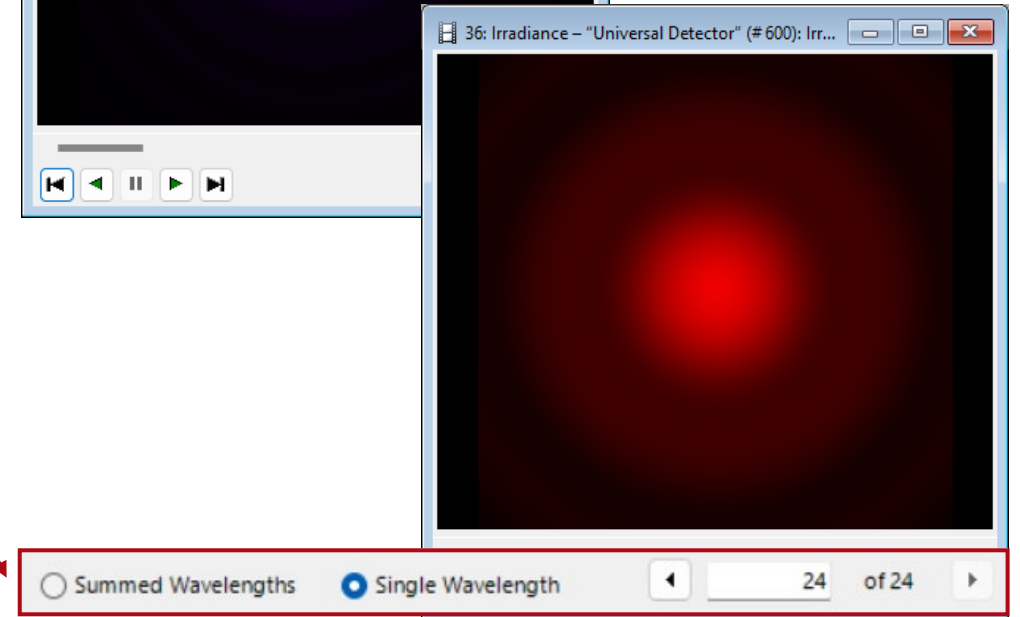
Real Color +
Summed
Wavelengths



Note: The Color Settings and Wavelength Selection part will only appear in case a Chromatic Field Set is used. For Data Arrays only the lower part is available.

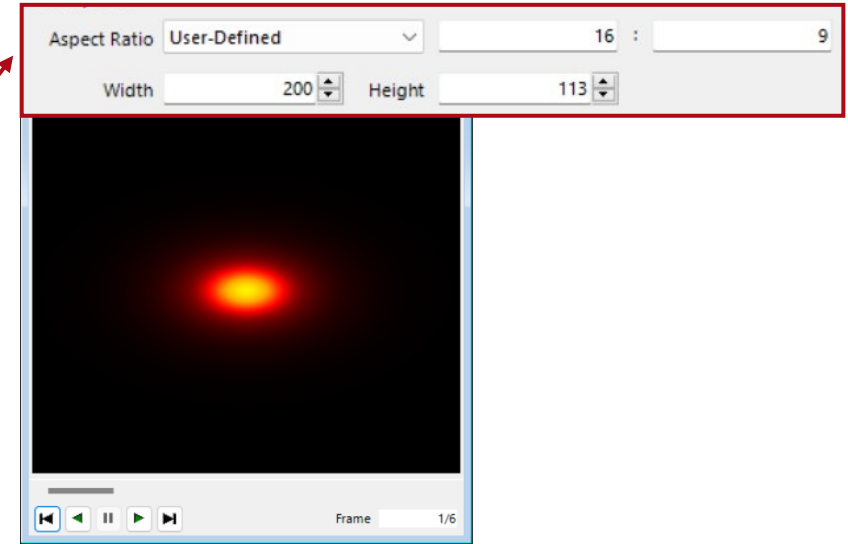
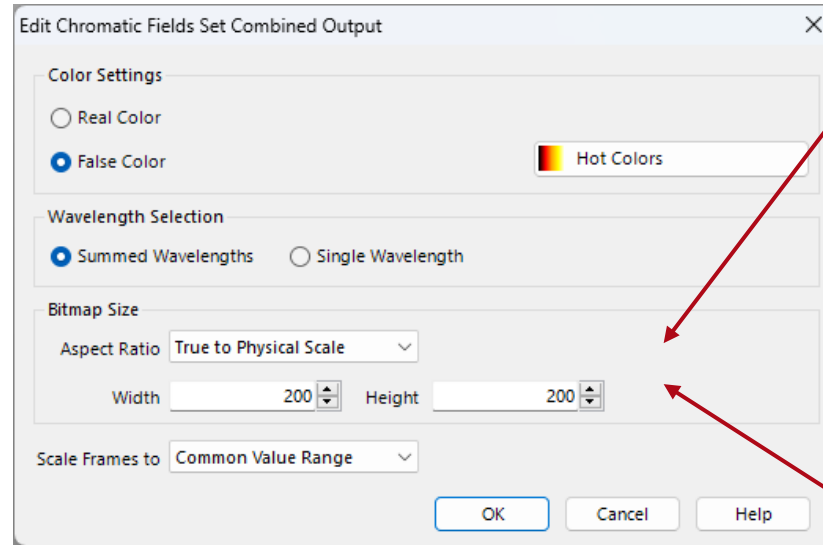
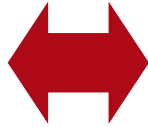
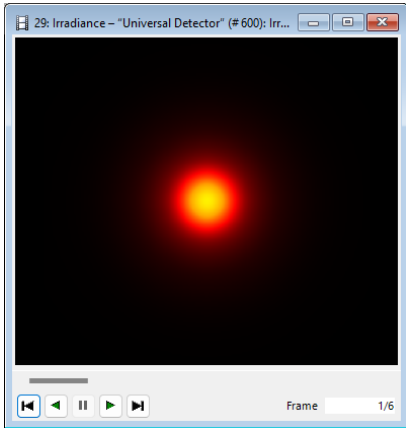


Real Color +
Single
Wavelengths



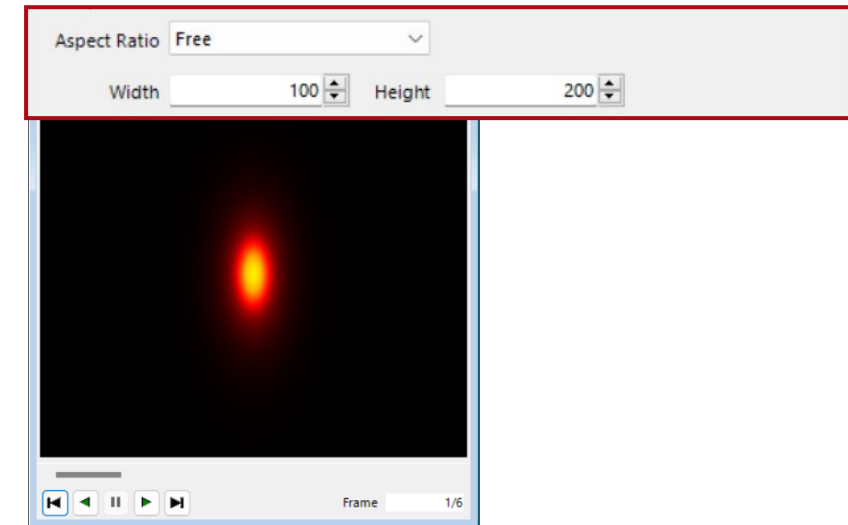
Animation Output : Bitmap Size

reference

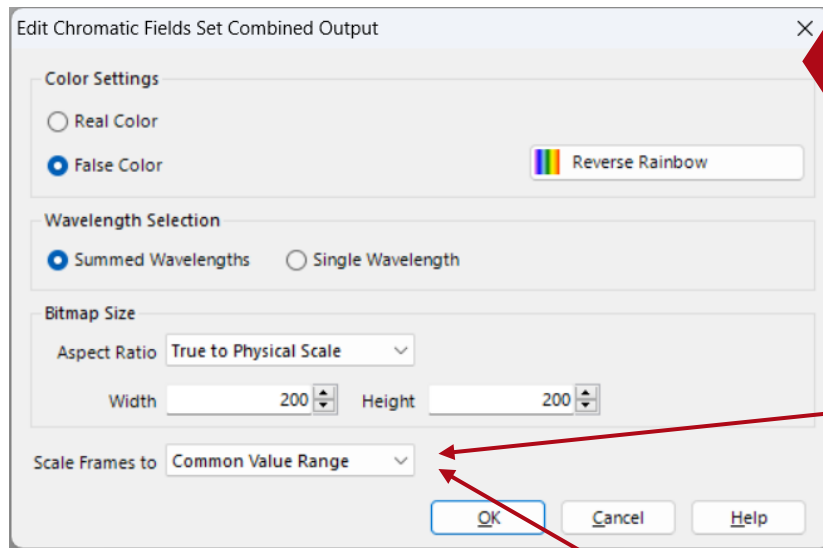


When you set the *Aspect Ratio* to *User-Defined*, you gain the flexibility to choose the most suitable ratio, ensuring the animation looks good on various devices, such as when it is displayed on projectors.

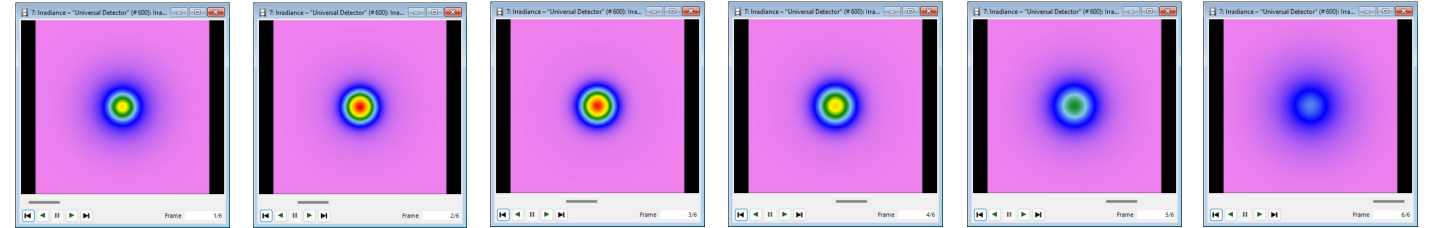
When the *Aspect Ratio* is set to *Free*, you can adjust the *Width* and *Height* of the individual bitmaps as desired.



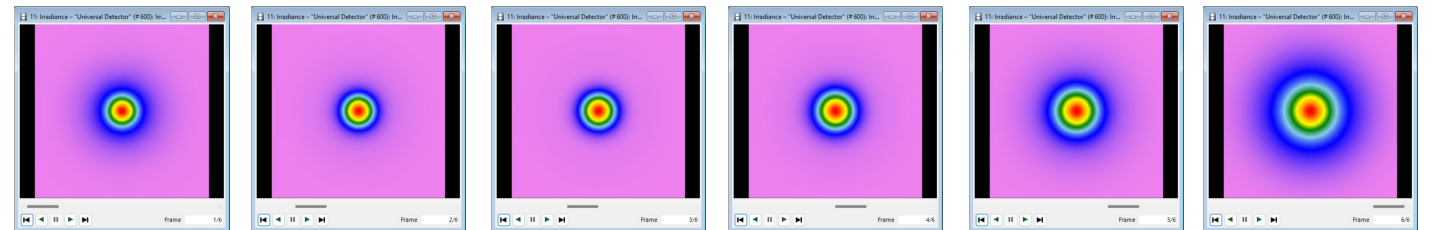
Animation Output: Data Scaling



reference

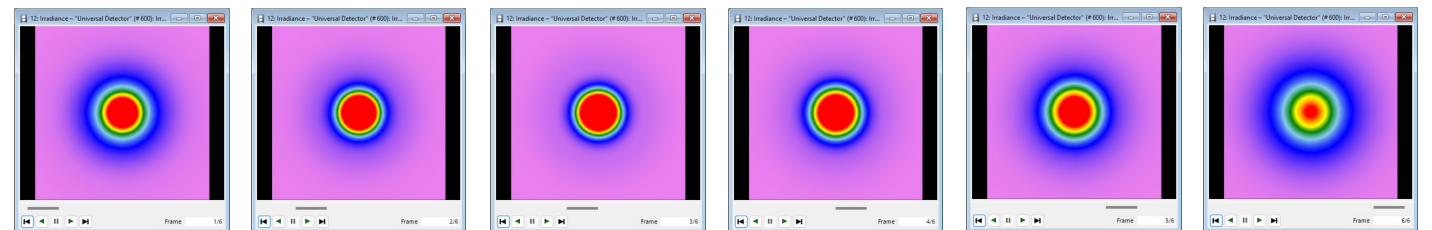


Scale Frames to Individual Value Range

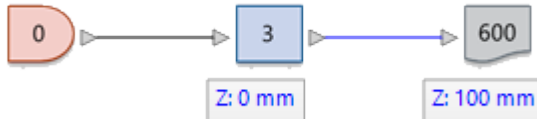


Scale Frames to User-Defined Value Range

0 W/m³ ... 5 W/m³



Plane Wave Spherical Lens Universal Detector



varying parameter:

position of the detector along the optical axis
(from 92mm – 112mm in 6 steps)

Export a Overview Image from the Animation

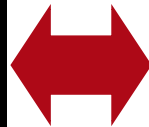
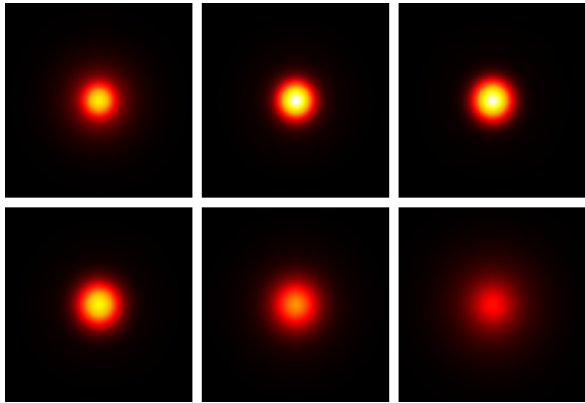
The screenshot illustrates the process of exporting an overview image from an animation. The 'File' menu is open, and the 'Export' submenu is visible. The 'Overview Image' option is highlighted, indicating it is the selected action. A dialog box titled 'Settings for Overview Image' is open, showing the following settings:

- Layout:** Animation contains 6 frames. Layout is set to 2x2 Frames. Space Between Frames is 10x10 Pixels. Resulting image has a size of 620 x 410 pixels.
- Stitching Order:** ☒ Stitch Horizontally First, ☐ Stitch Vertically First. ☒ Start at Top, ☐ Start at Bottom.
- Result:** Result is saved at C:\Users\Kuehn\...\Overview of Animation.png.
- Validity:** Validity: ☒ OK.

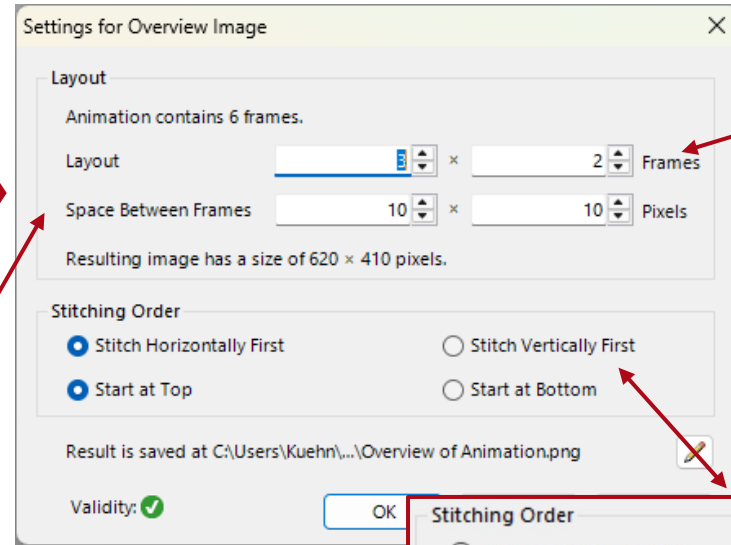
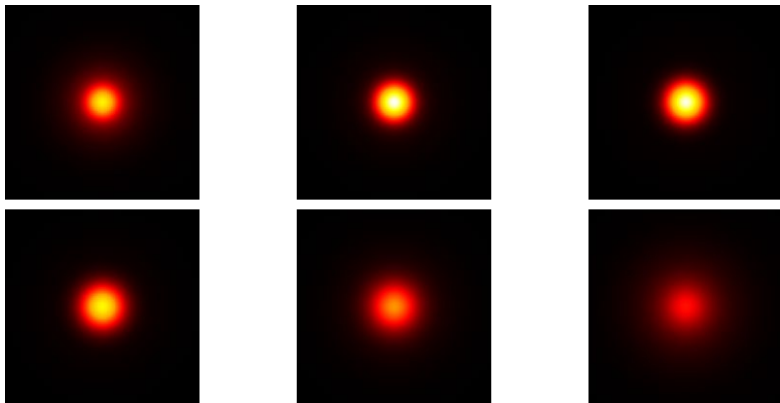
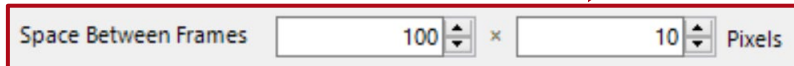
The resulting image is shown as a 2x2 grid of frames, each containing a glowing red and yellow sphere. The 'OK' button in the dialog box is highlighted, indicating the final step in the process.

Export Options of the Overview Image

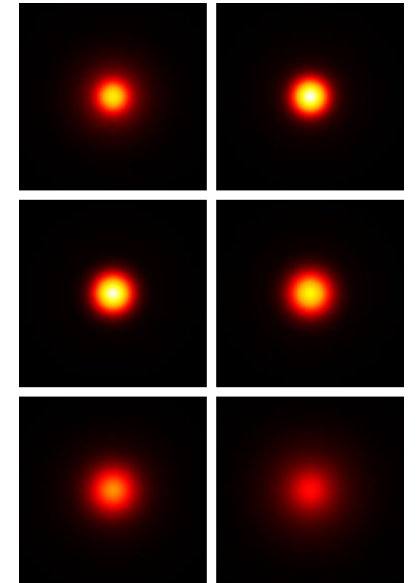
reference



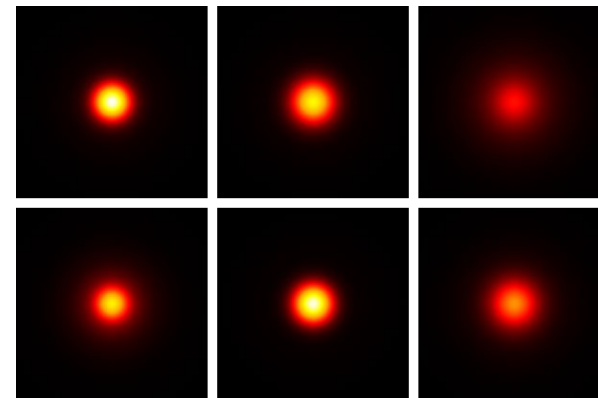
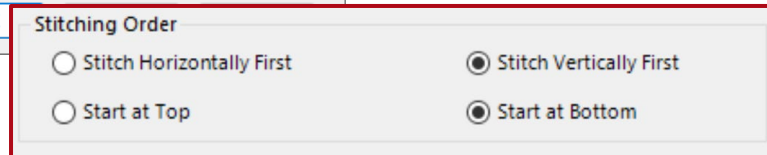
adjusted spacing



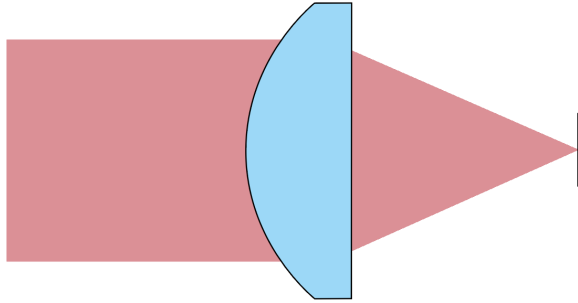
adjusted layout



adjusted order



Application Example 1: Detector Position Variation

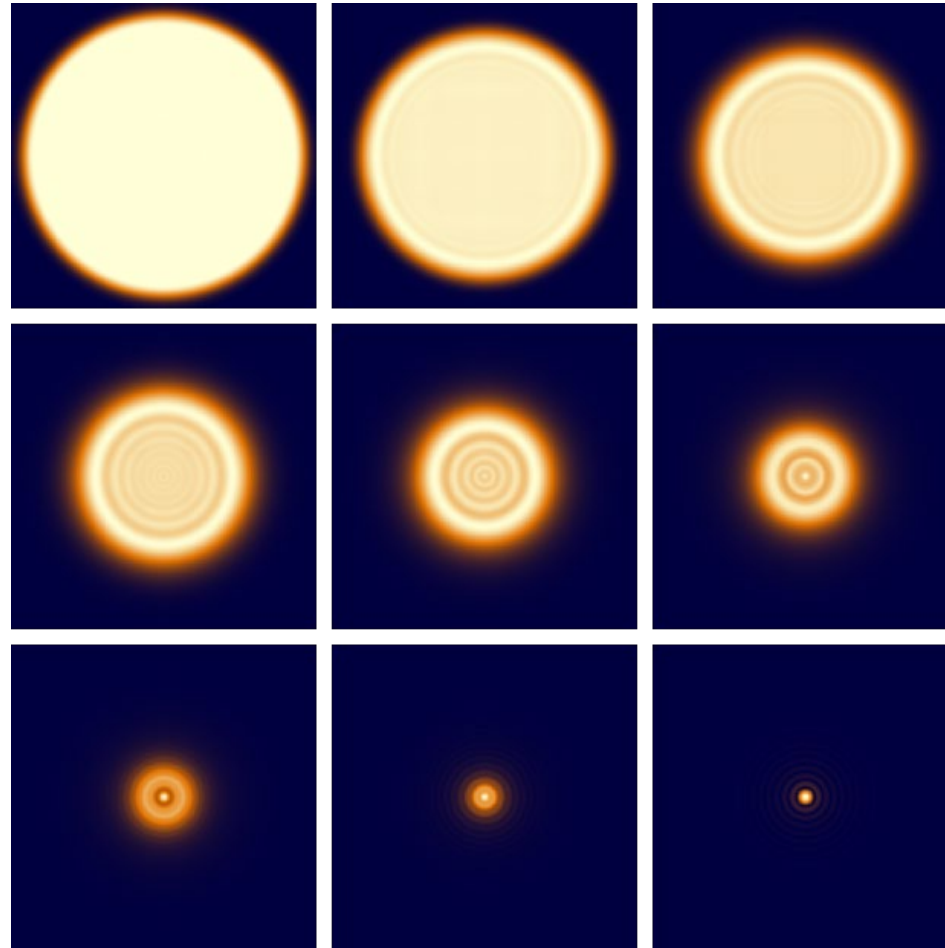


fixed parameter

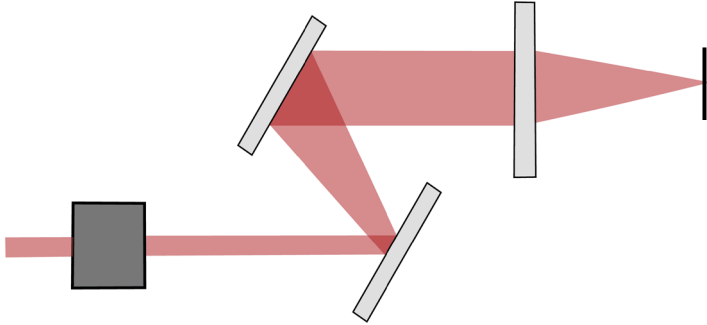
- source: Plane Wave, 532nm
- idealized lens: 100mm focal length

varying parameter

- distance between detector and ideal lens
- from 0nm – 100nm in 9 steps



Application Example 2: Pulse-Front Tilt



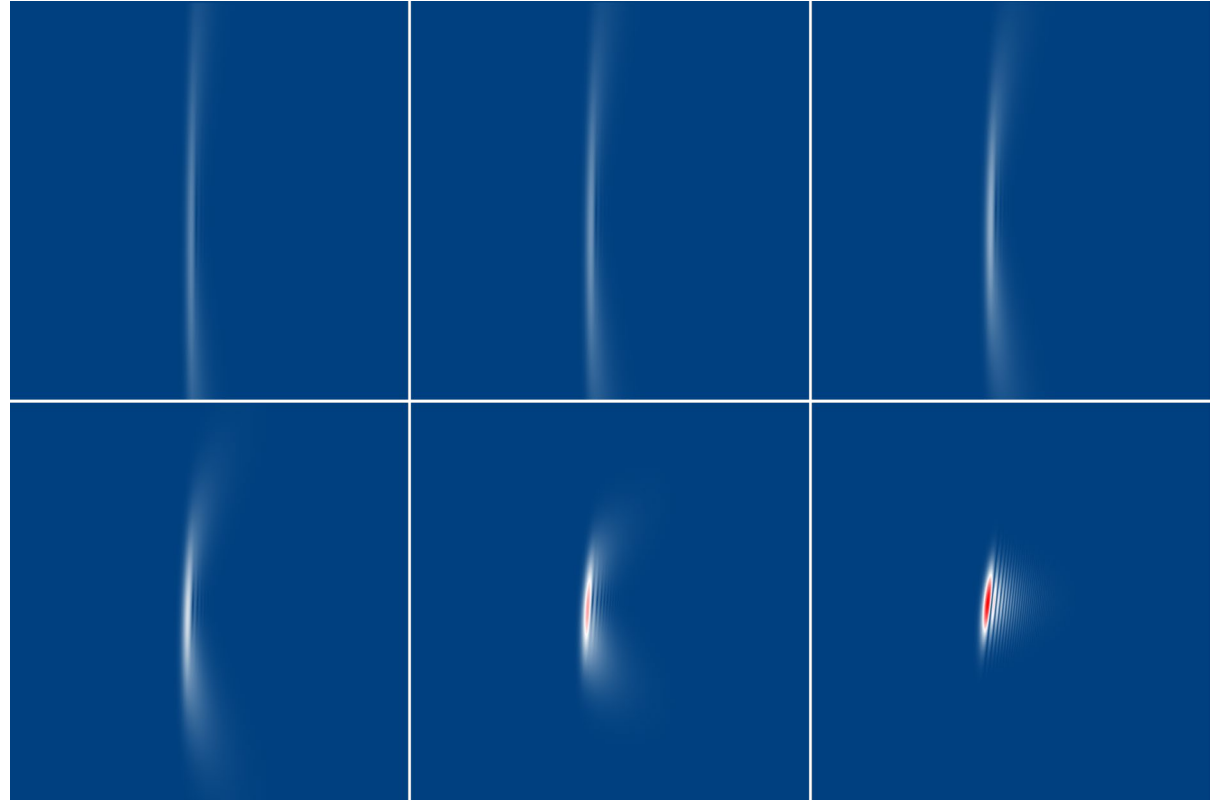
fixed parameter

- source: 25fs Gaussian pulse
- idealized lens: 75mm focal length

*For a full list of the parameters, see:
[Pulse Front Tilt in SSTF-Setups](#)*

varying parameter

- distance between detector and ideal lens
- from 70mm – 75mm in 6 steps



Document Information

title	Export Overview Images from Animations
document code	SWF.0020
document version	1.0
software edition	VirtualLab Fusion Basic
software version	2023.1 (Build 1.556)
category	Feature Use Case
further reading	<ul style="list-style-type: none">• <u>Usage of the Parameter Run Document</u>• <u>Animation Generation from Chromatic Fields Sets in Parameter Run</u>• <u>Export of Results of a Parameter Run</u>

Presearch

SWF.0020, Overview Image, overview, image, animation, animations, parameter run, export, result, visualization, save, saving, figure, figures, customization, report, report customization, video

Short Abstract

In this use case we demonstrate how to create a picture that incorporates the course of an animation.

Marketing Picture

