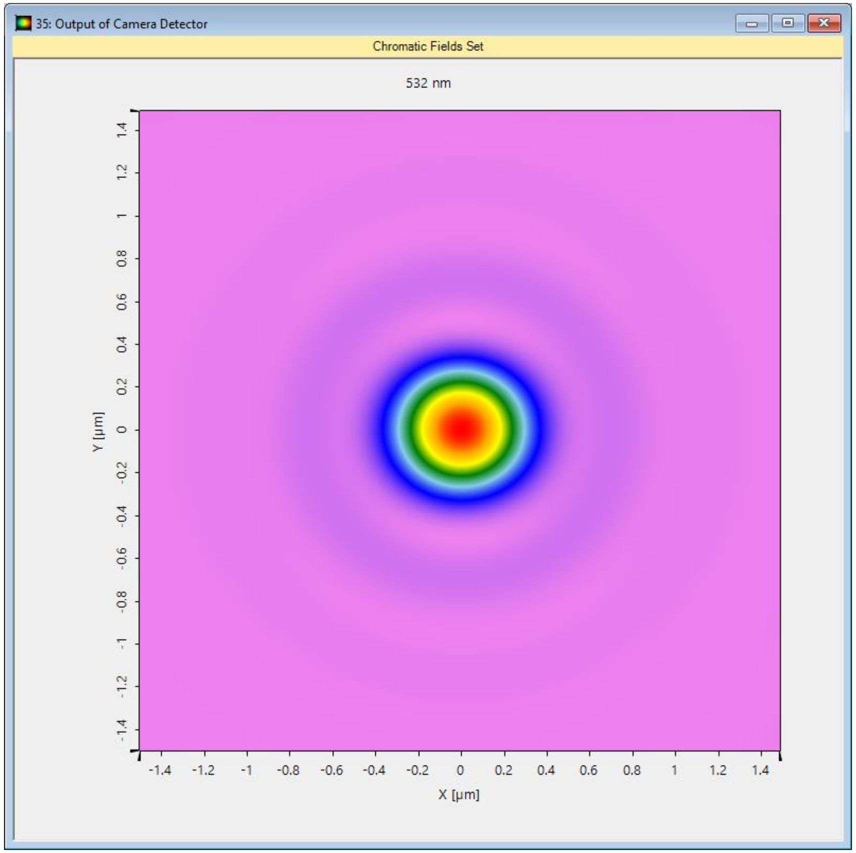
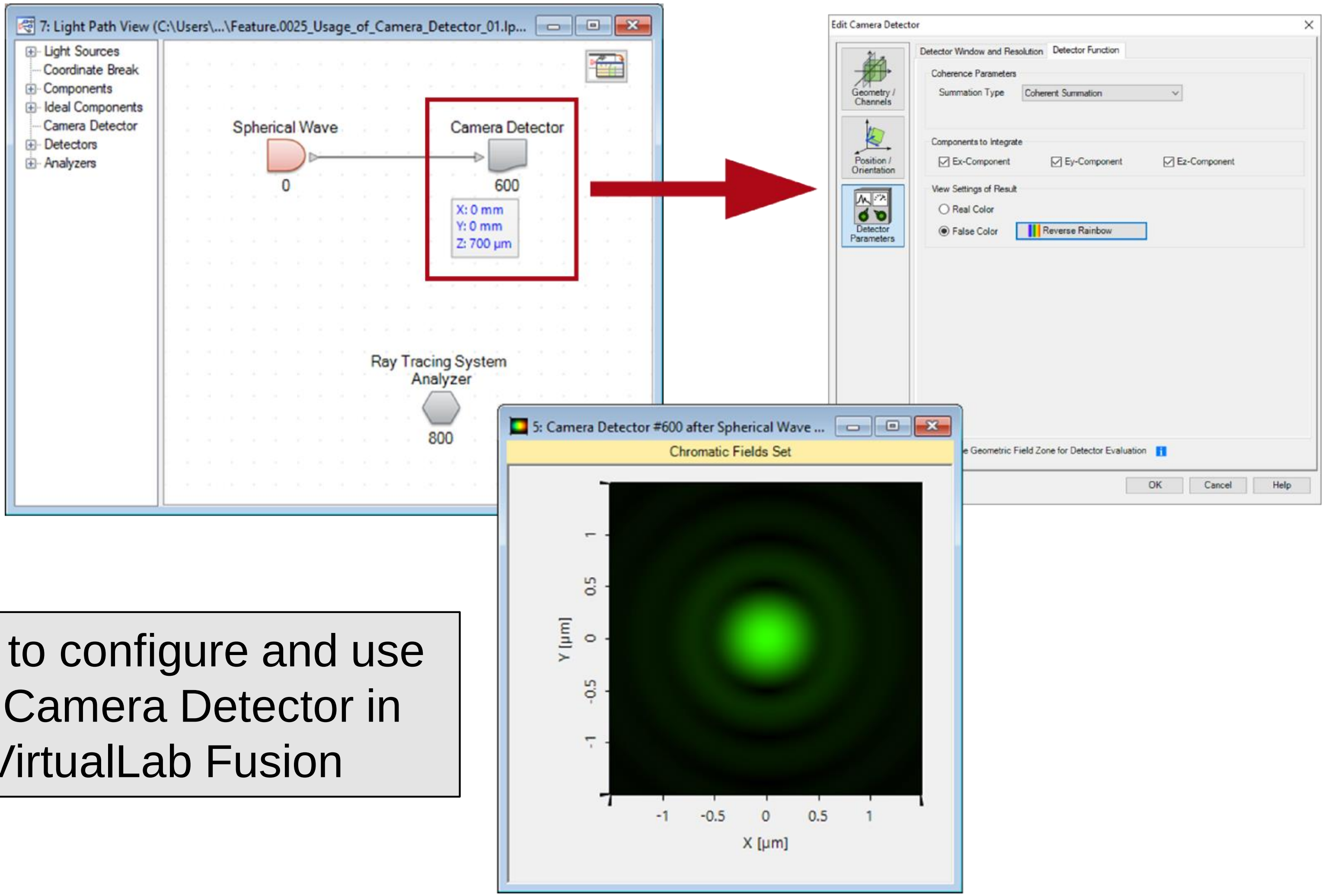
Usage of Camera Detector

Abstract



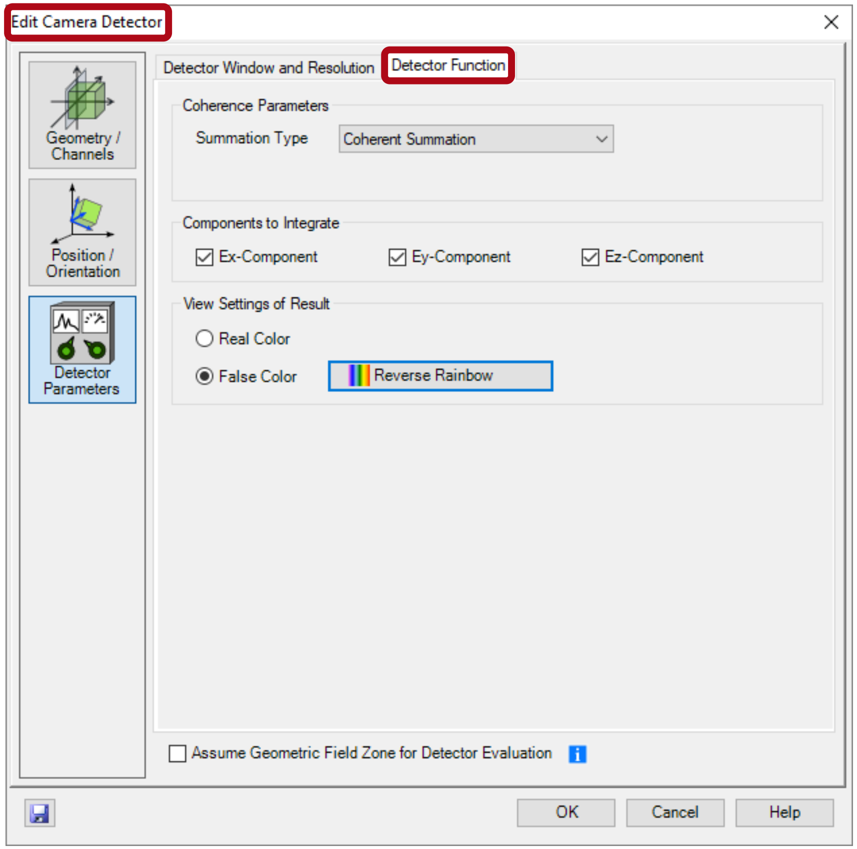
The Camera Detector constitutes one of the most fundamental detectors in VirtualLab Fusion. It allows the user to visualize the energy density distribution of the light in their system, with the option to select which components will be used in the calculation. It has settings for real or false color and can provide results for ray tracing and physical optics indistinctly. Keep reading for an in-depth description of how to configure and use this detector in simulations.

Modeling Task



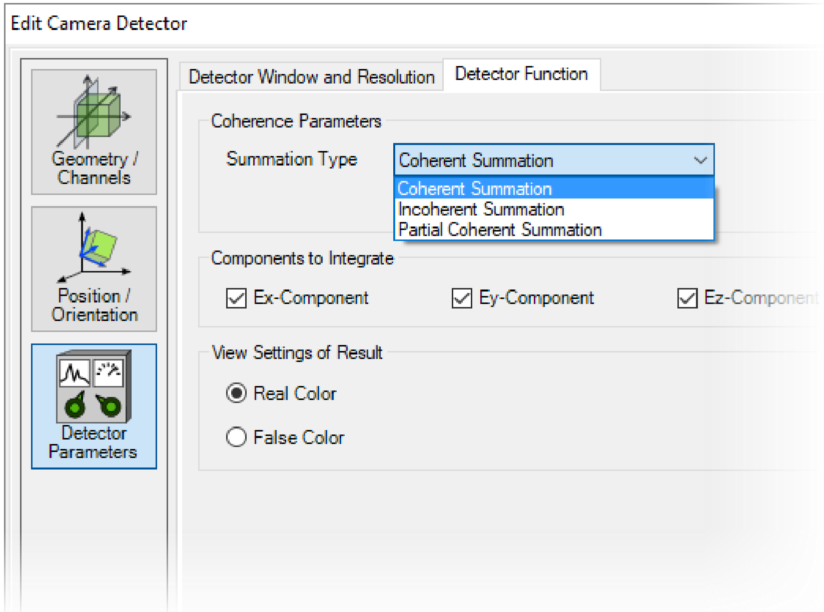
How to configure and use the Camera Detector in VirtualLab Fusion

Edit Options of Camera Detector



- The edit dialog of the camera detector can be accessed by double clicking on the detector item within the light path diagram view.
- Several options can be preconfigured in the edit dialog.

Parameters of Camera Detector



Description

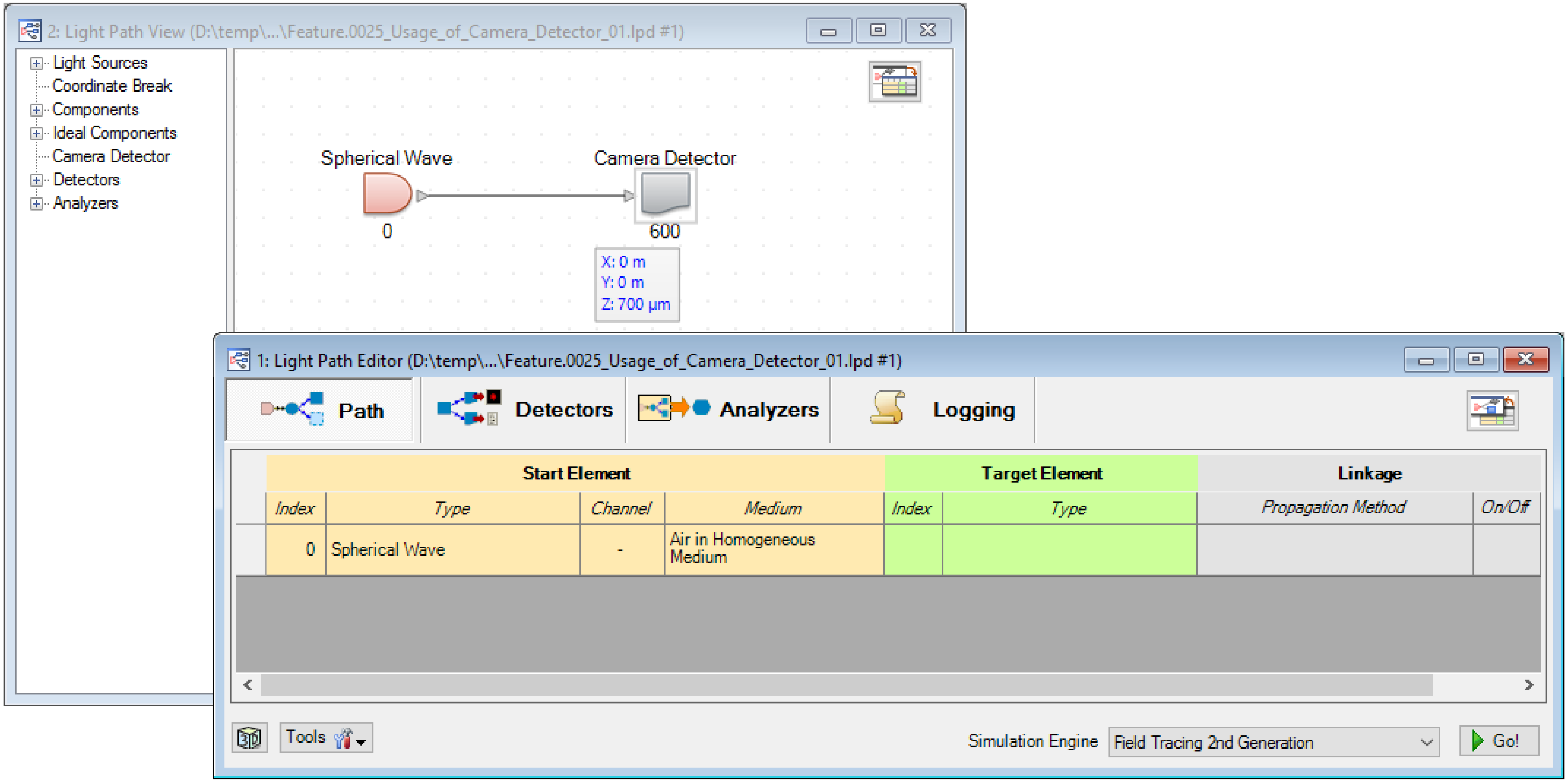
Coherence Parameters determines how the modes shall be handled by the detector, and can be selected amongst coherent, incoherent, or partial coherent (coherence time required) summation.

Components to Integrate controls the vectorial components to be used for calculation. By default E_x, E_y and E_z are selected.

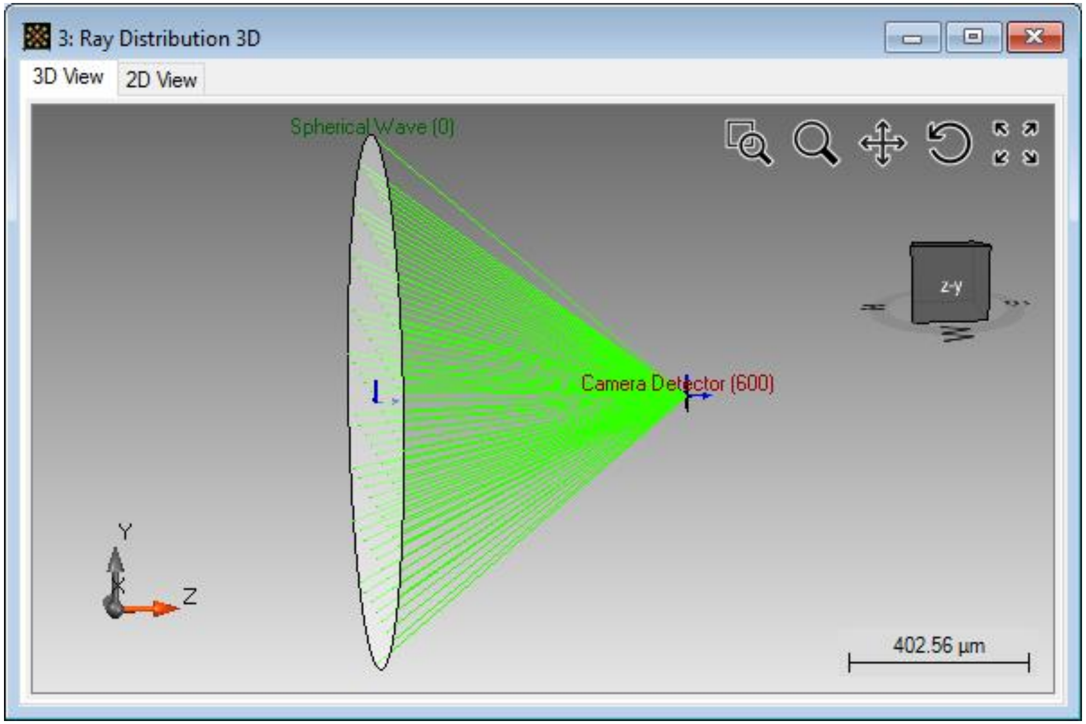
View Settings of Result can be selected between

- *Real Color* showing the intensity distribution as color perception in the lab,
- *False Color* showing the intensity according to pre-defined or customized color lookup tables.

Sample System for Camera Detector

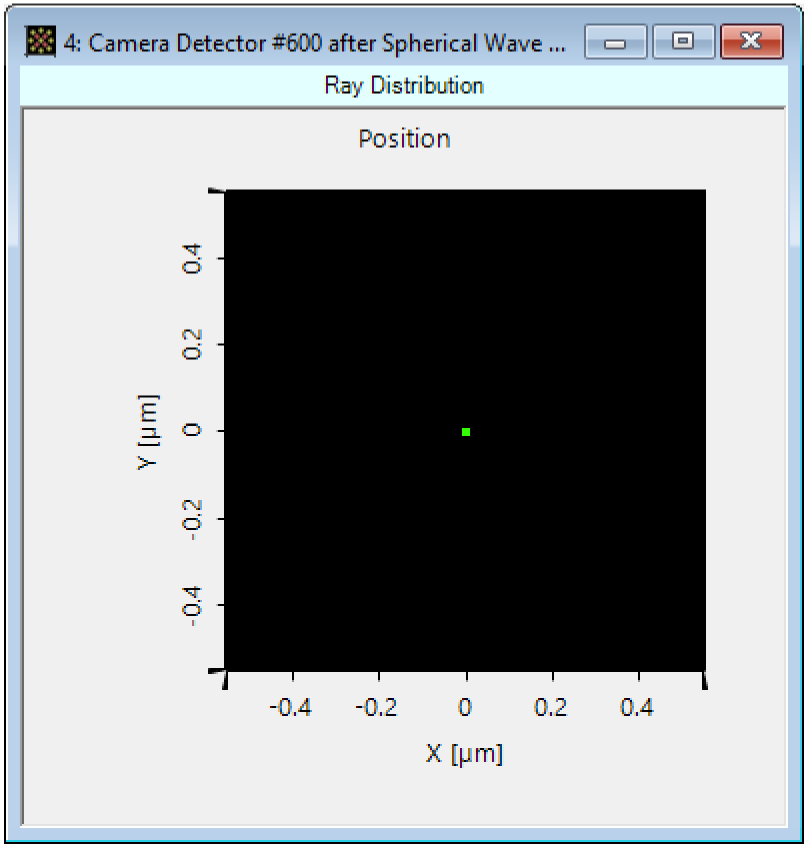


Result of Ray Tracing System Analyzer



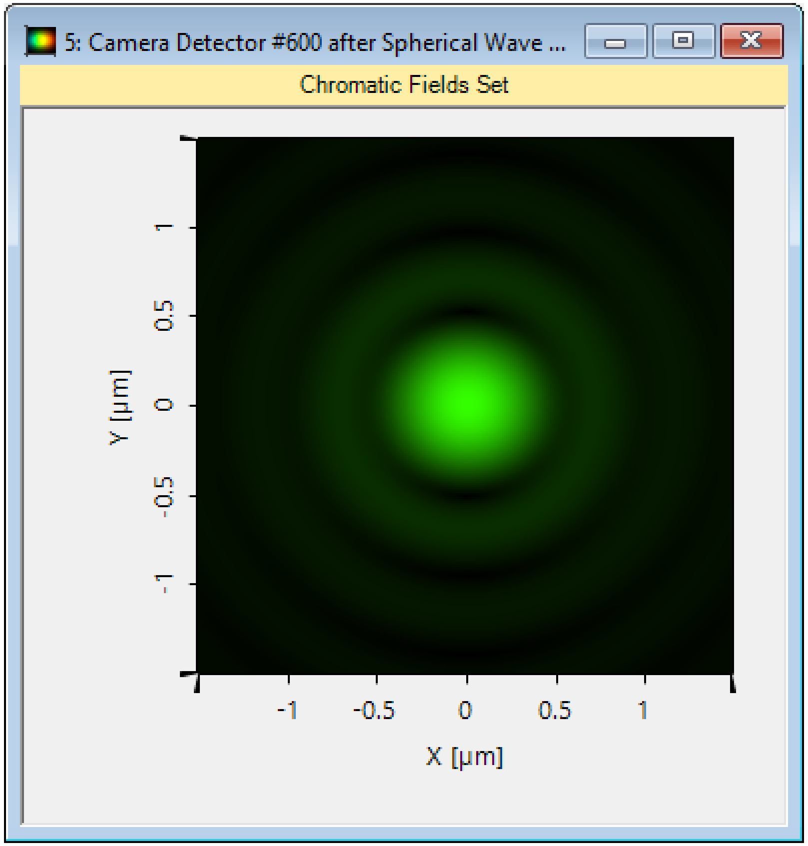
- The sample system contains a spherical wave and a camera detector placed in the focus.
- The NA of the spherical wave is 0.58.

Camera Detector Output for Ray Tracing



- If the user performs ray tracing analysis of the system which contains a camera detector, a dot diagram showing the rays in the detector plane is shown.
- For the presented example we only one point, because of the perfect converging spherical wave.

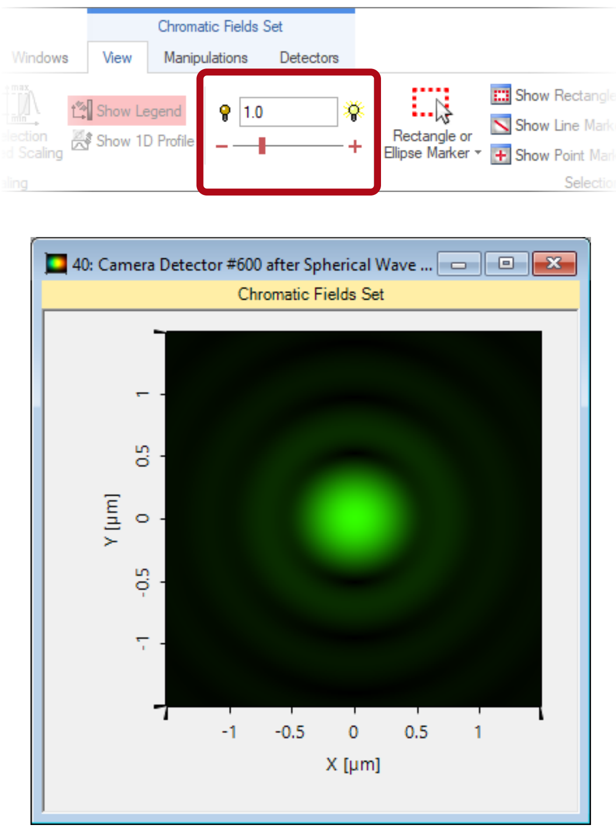
Real Color Output

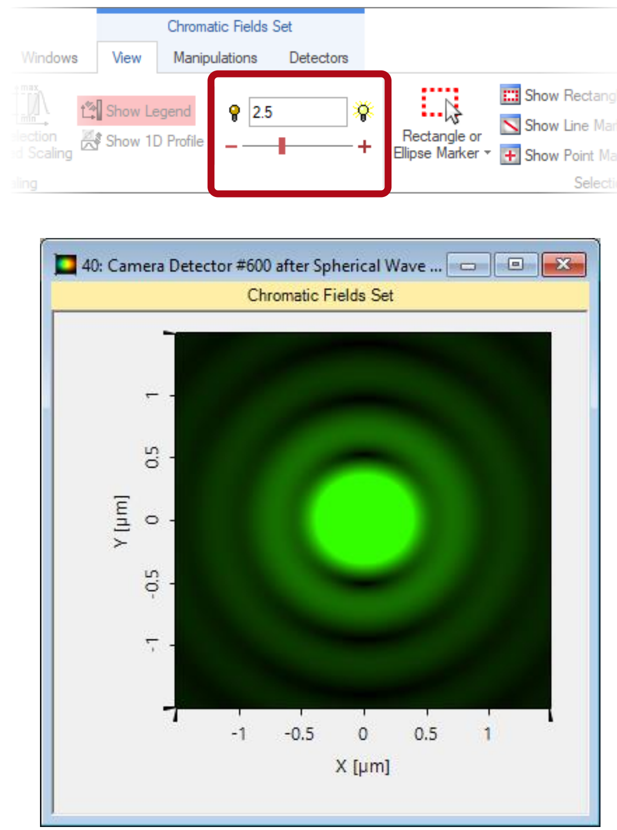


- The picture on the left side shows the real color output of the camera detector.
- In this case we used $E_x^2 + E_y^2 + E_z^2$ for evaluation.

Real Color Output

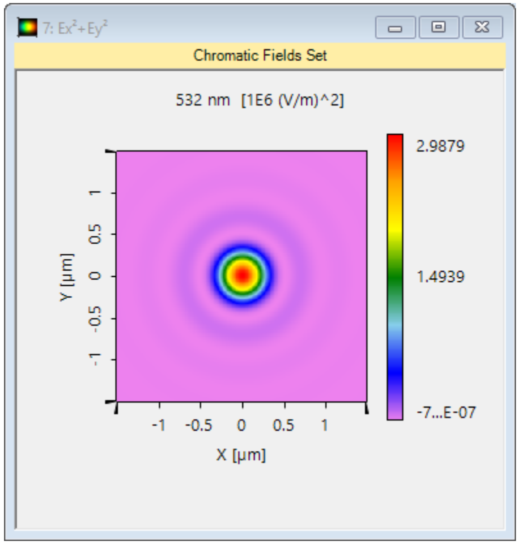
- The user can change view settings of the document, for example, the brightness in the view ribbon.



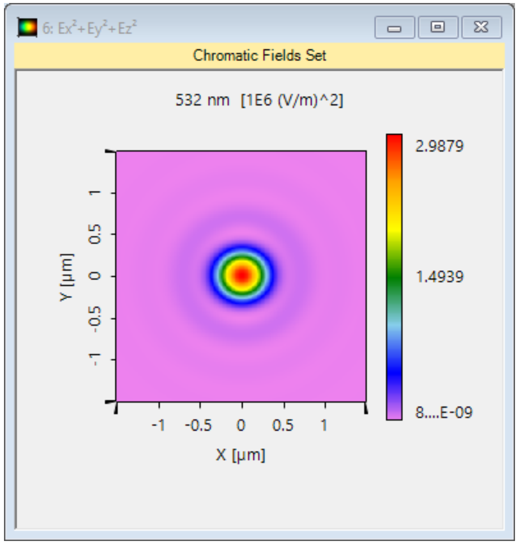


False Color Output (Different Field Components)

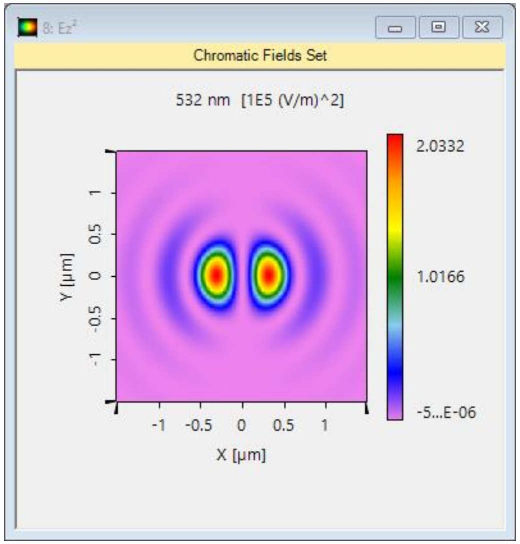
- The screenshots below show the output of the camera detector in false color view.
- We calculated the intensity distribution for several combinations of vectorial components.



$E_x^2 + E_y^2$



$E_x^2 + E_y^2 + E_z^2$



E_z^2

Document Information

title	Usage of Camera Detector
version	1.0
VL version used for simulations	7.0.3.4
category	Feature Use Case