Scenario 278.01: Simulation of interferometer with temporal partially coherent light source

Demonstrate the modeling of a temporal partially coherent light source and the light propagation in an interferometer.

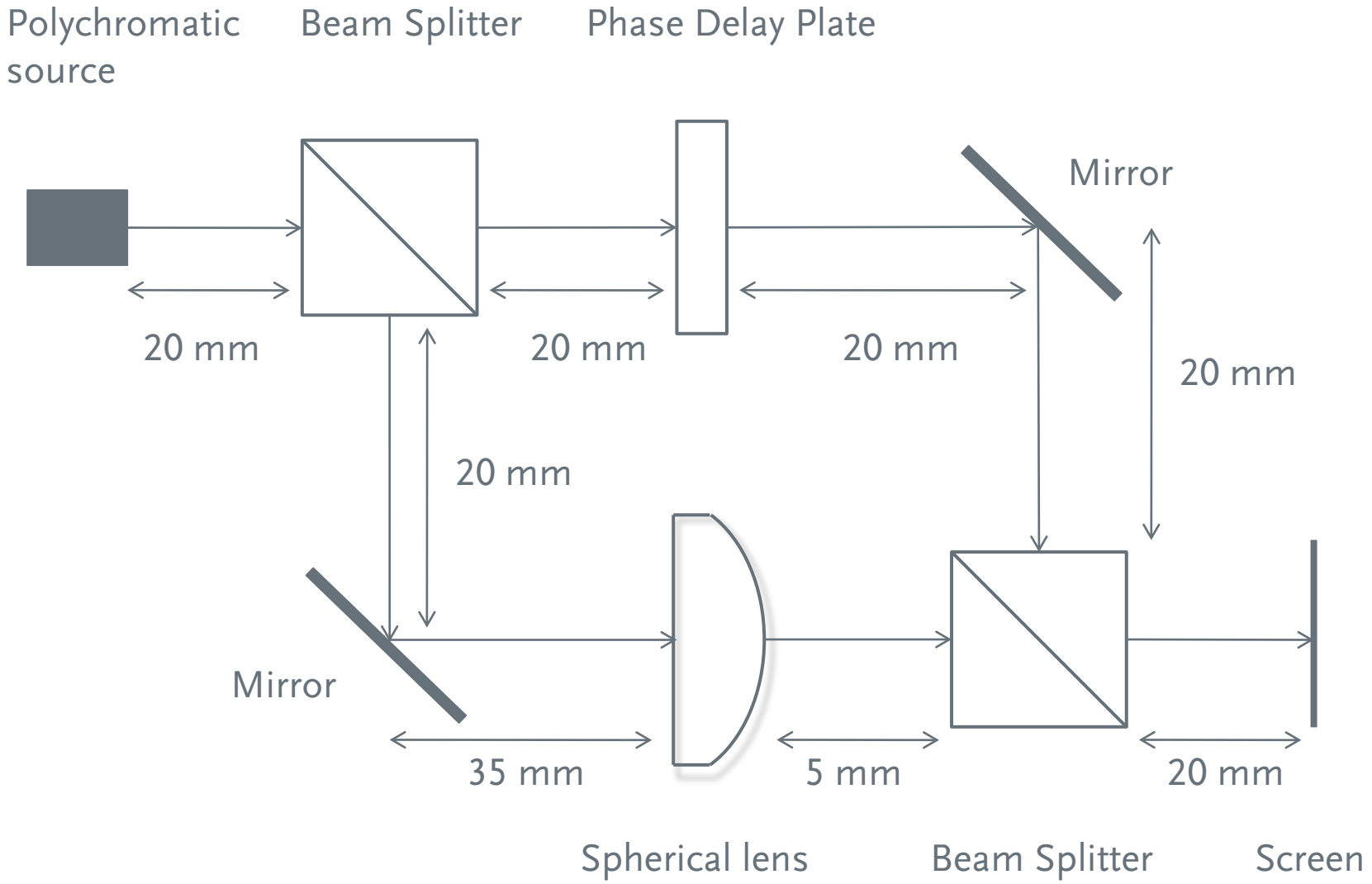
Keywords: temporal coherence, interferometer, spectral band width

Required Toolboxes: Starter Toolbox

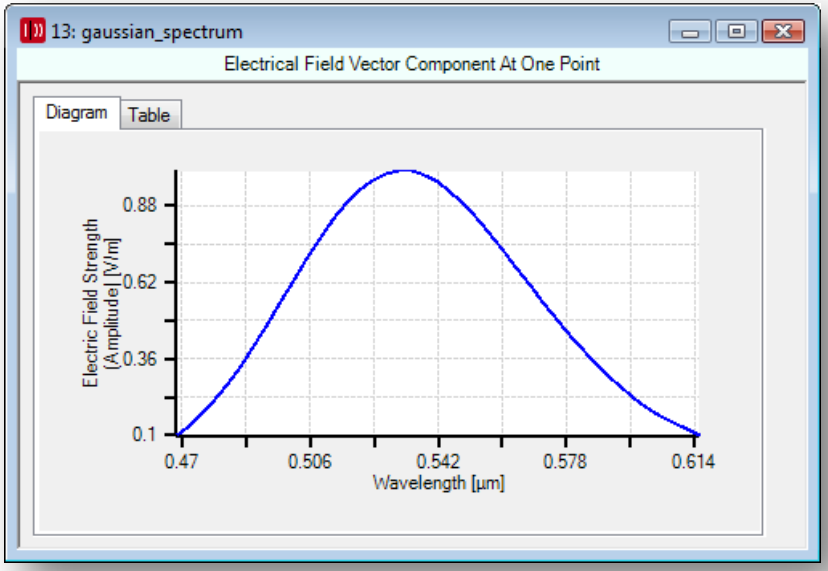
Related Tutorials:

LIGHTTRANS

Modeling Task

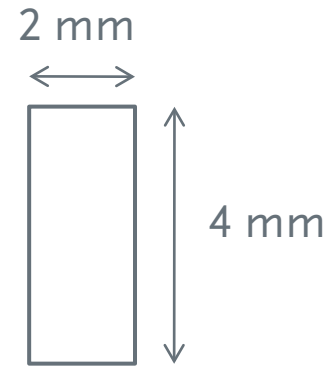


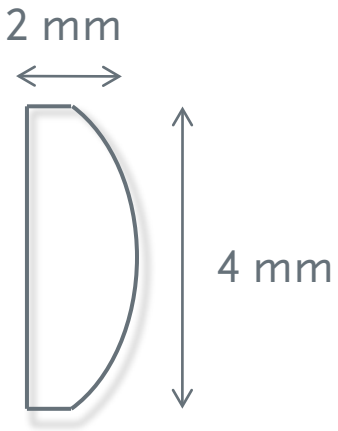
Modeling Task



- The light source has constant intensity with 3.5 mm diameter.
- The center wavelength is 532 nm.
- Gaussian spectrum with 56 nm FWHM.
- Spectrum corresponds to a temporal coherence length of 5 µm.
- Spectral distribution can be generated with spectrum generators in light source menu.
- 41 wavelengths are used for simulation.

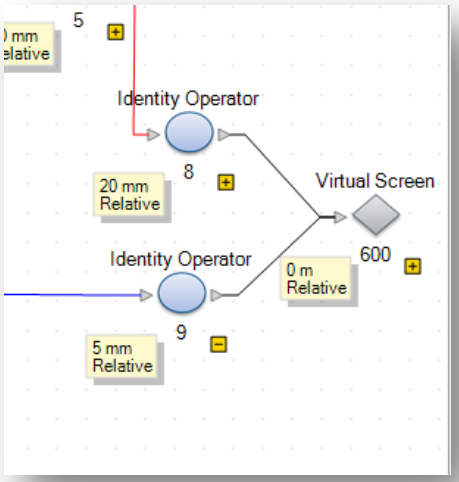
Modeling Task

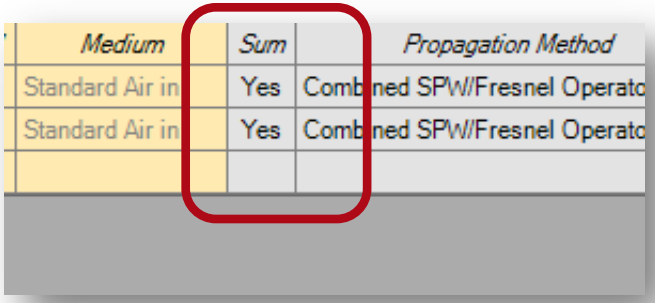




- The interferometer measures a spherical lens with a radius of curvature of 100 mm.
- In the reference path a phase delay plate is used.
- Plate and lens are made of BK7.

Modeling Task





Medium		Sum		Propagation Method
Standard Air in		Yes	Comb	ned SPW/Fresnel Operato
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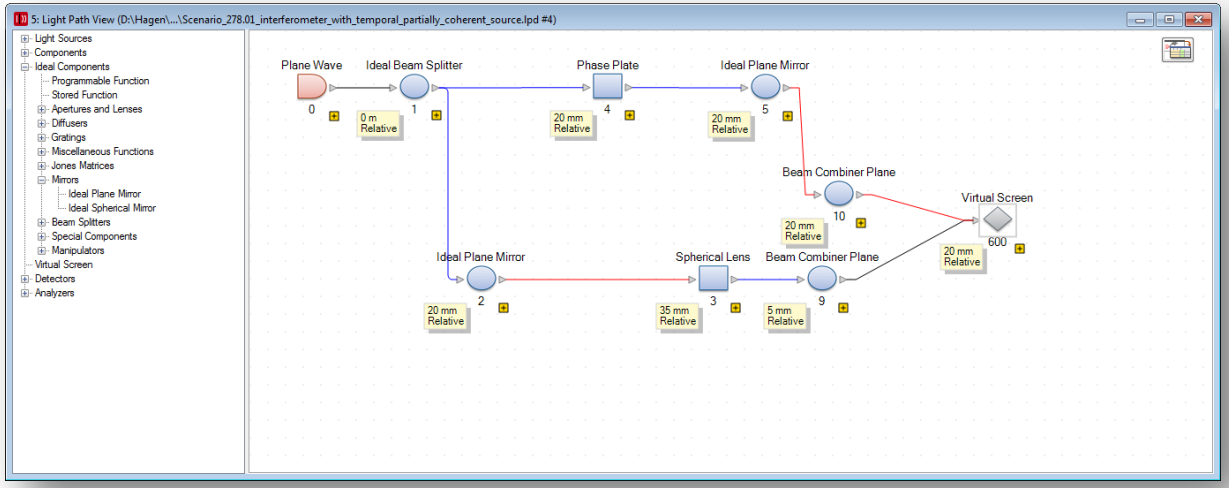
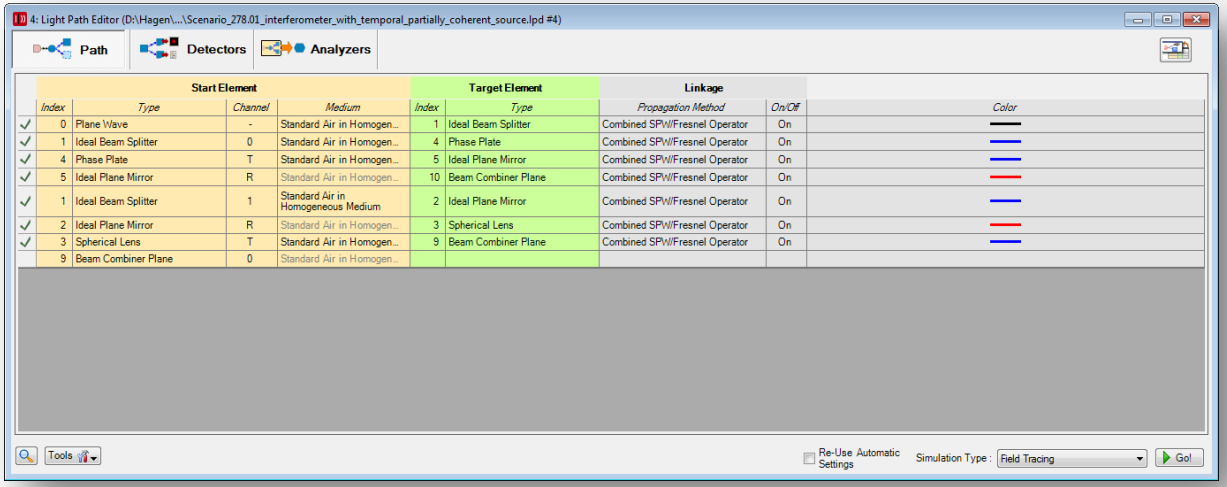
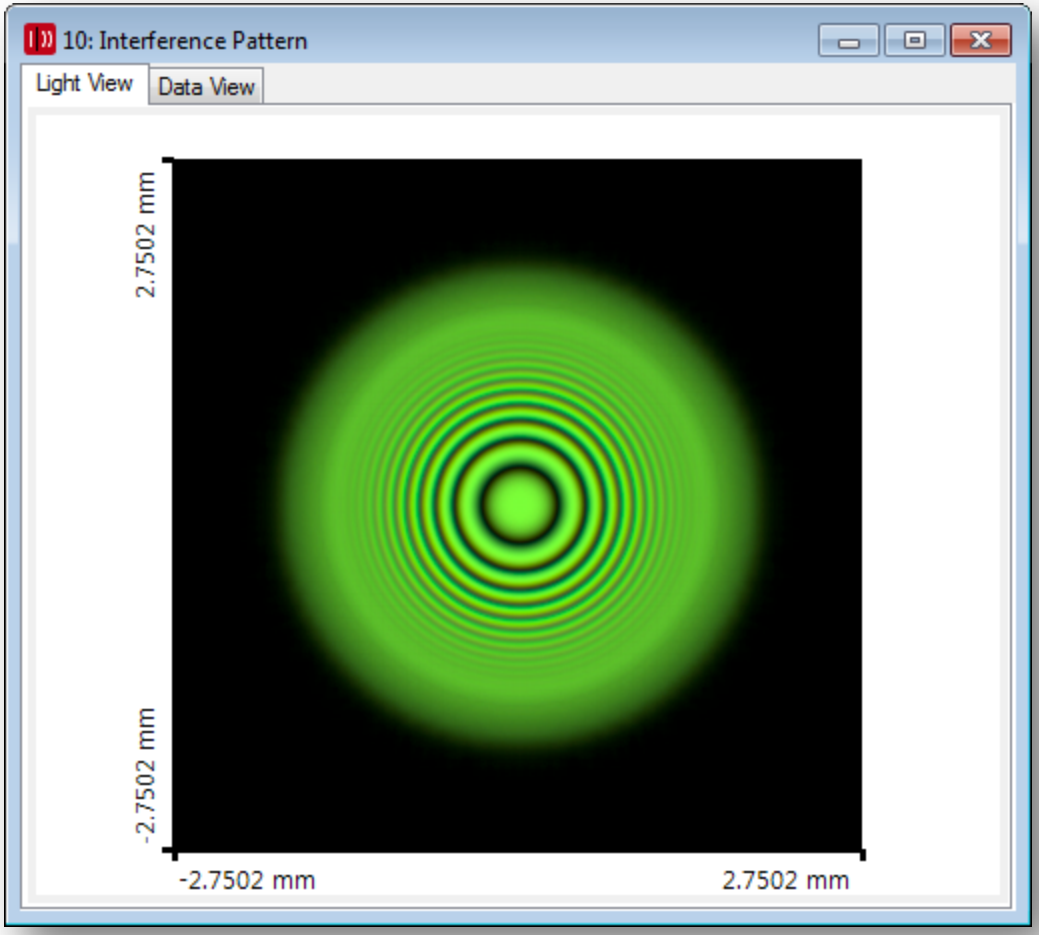
- Splitting of light beam by ideal beam splitter.
- Combining of laser beam by virtual screen. The screen must switched in sum-mode to interfere the light distributions.

Light Path Diagram





Simulation Results



Summary

- VirtualLab™ can model temporal partially coherent sources.
- Modeling of interferometers possible.
- Interferences of partially coherent waves can be calculated.