

## Application Scenario 278.01: Simulation of Interferometer with Temporal Partially Coherent Light Source

### Abstract

This application scenario demonstrates the modeling of interferometers. Especially the simulation of beam splitting cubes and beam combination is demonstrated. In addition it is shown that VirtualLab can model easily temporal coherence effects caused by the bandwidth of a stationary source. The modeling of the temporal coherence is done by using several wavelengths for the analysis of the interferometer.

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<b>Keywords:</b>	Interferometer, Starter Toolbox
<b>Requirements:</b>	VirtualLab Advanced version 5.2.1 or higher – <b>Starter Toolbox</b>
<b>Version:</b>	2.0
<b>Files:</b>	Corresponding files can be found <a href="#">here</a> .

The set up of an interferometer in VirtualLab is demonstrated in a light path diagram which is stored in the file `Scenario_278.01_interferometer-with-temporally-partially-coherent_source.lpd` that can be opened in VirtualLab.

The light path contains a light source (*Plane Wave*) with temporal coherence (Gaussian spectrum of low bandwidth) and a subsequent *Ideal Beam Splitter* whose two output channels are connected with a *Spherical Lens* and a *Phase Plate*, respectively. The phase plate is used to introduce a time delay in the reference arm of the interferometer. The thickness of the plate was selected so that the on-axis optical path lengths of the measurement and the reference interferometer arms are identical.

The output channels of the lens and the phase plate are superposed via the *Sum* property of the subsequent *Virtual Screen* to simulate the beam combination.

By pressing the **Go**-button the resulting light distribution on the target plane is calculated.

### Technical Support

If you have any questions, remarks or problems concerning this application scenario, or in using VirtualLab in general, please do not hesitate to contact us by E-Mail [support@lighttrans.com](mailto:support@lighttrans.com).

Please use the update service to install the current version of VirtualLab. Alternatively you can use the latest **Trial Version** of VirtualLab which is avail-

able at our [download site](#). If you have been registered already for an older trial version, just contact us by [E-Mail](#).

To ensure that this application scenario gives the same results as described, set the global settings to the default values. In VirtualLab this can be done in the **Extras > Global Options** dialog with the *Reset All* button.