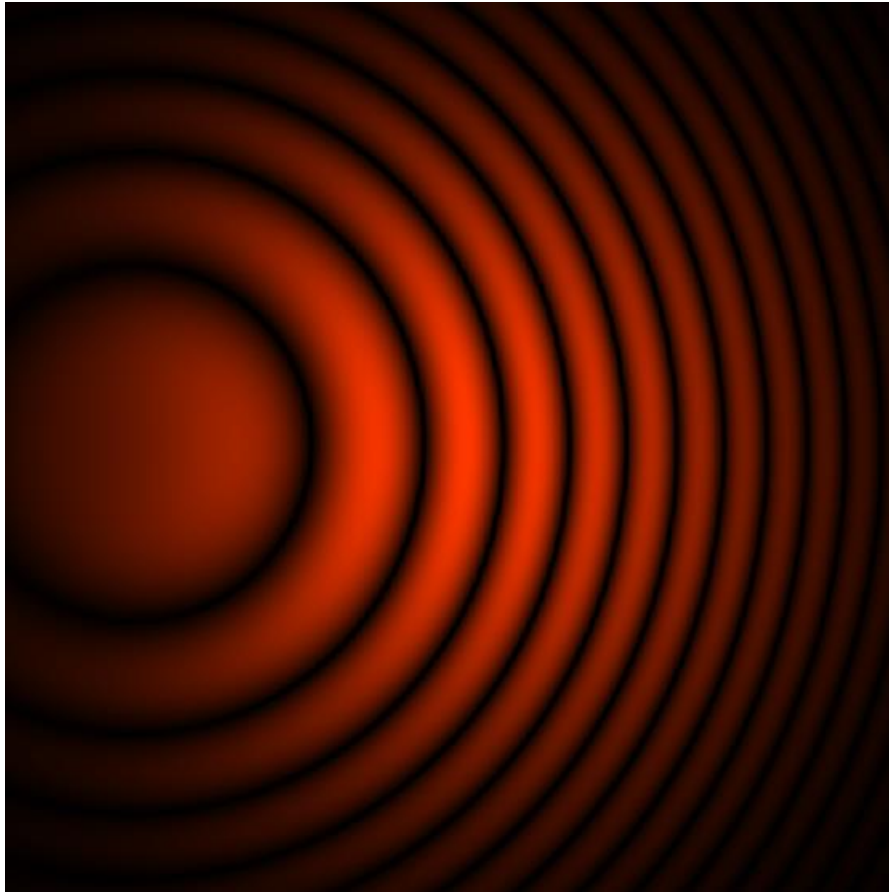


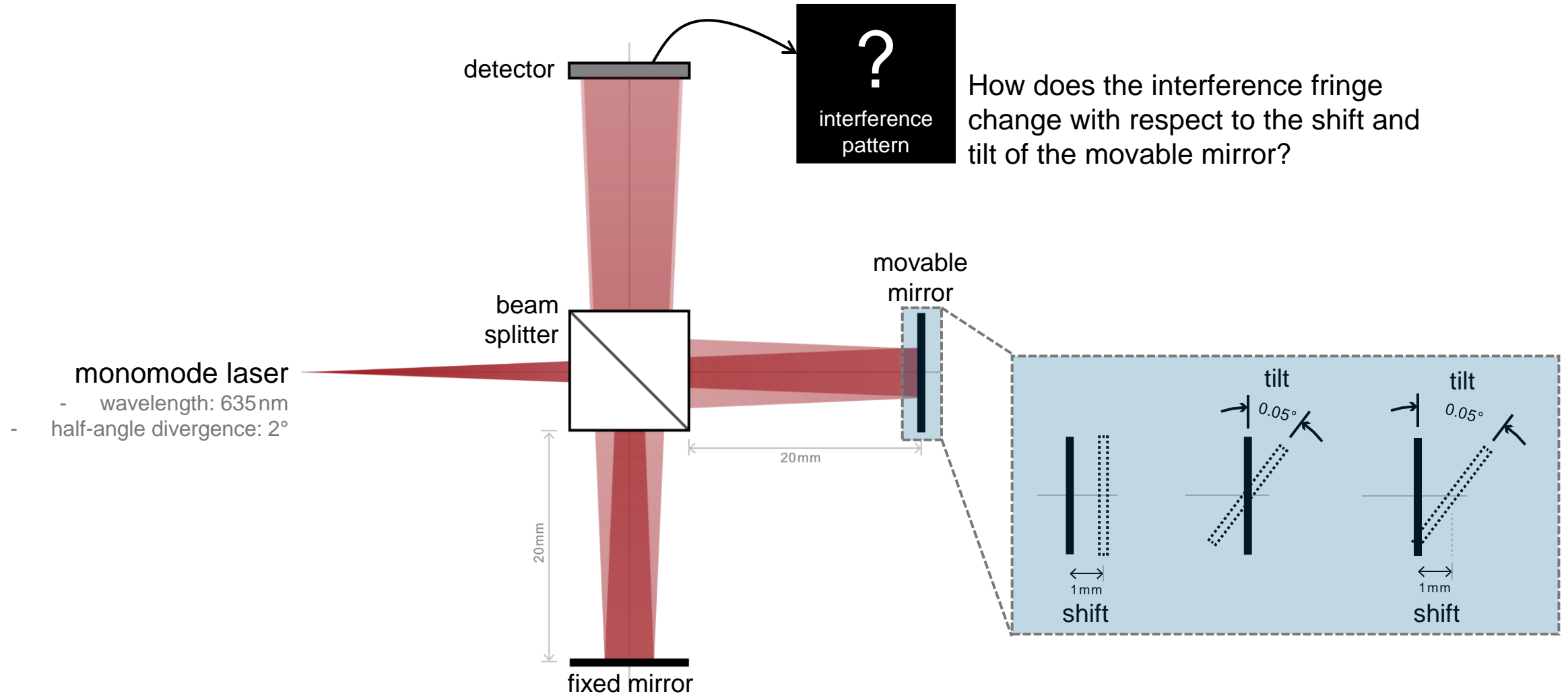
Laser-Based Michelson Interferometer and Interference Fringe Exploration

Abstract

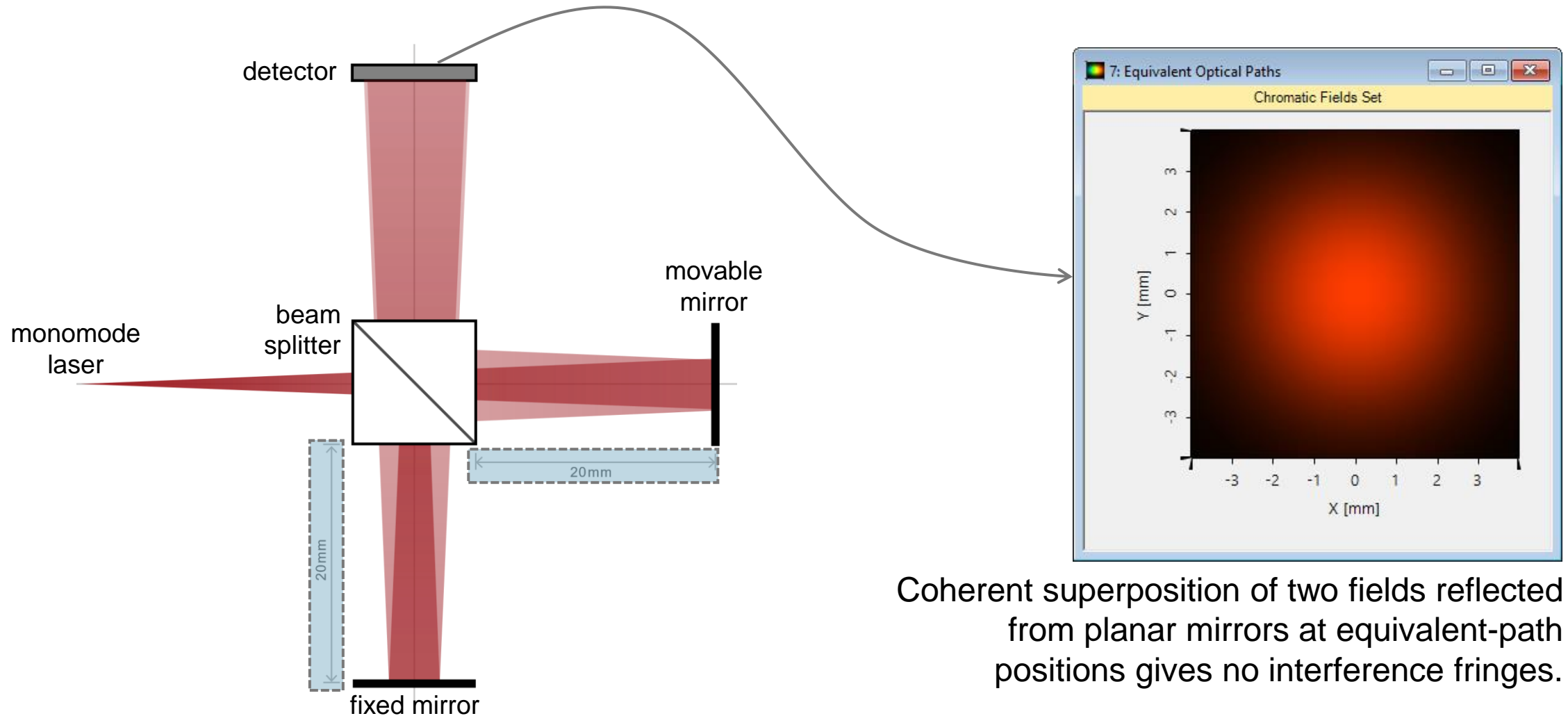


Michelson interferometer is a typical configuration for optical interferometry. Different configurations in the setup may lead to different interference fringes, and therefore it is worth of investigating the relation between them. With the help of non-sequential tracing technology in VirtualLab Fusion, it is easy to set up and to configure a Michelson interferometer, and to visualize the interference fringe in different situations. In this example, several typical situations and the corresponding fringes are demonstrated.

Modeling Task

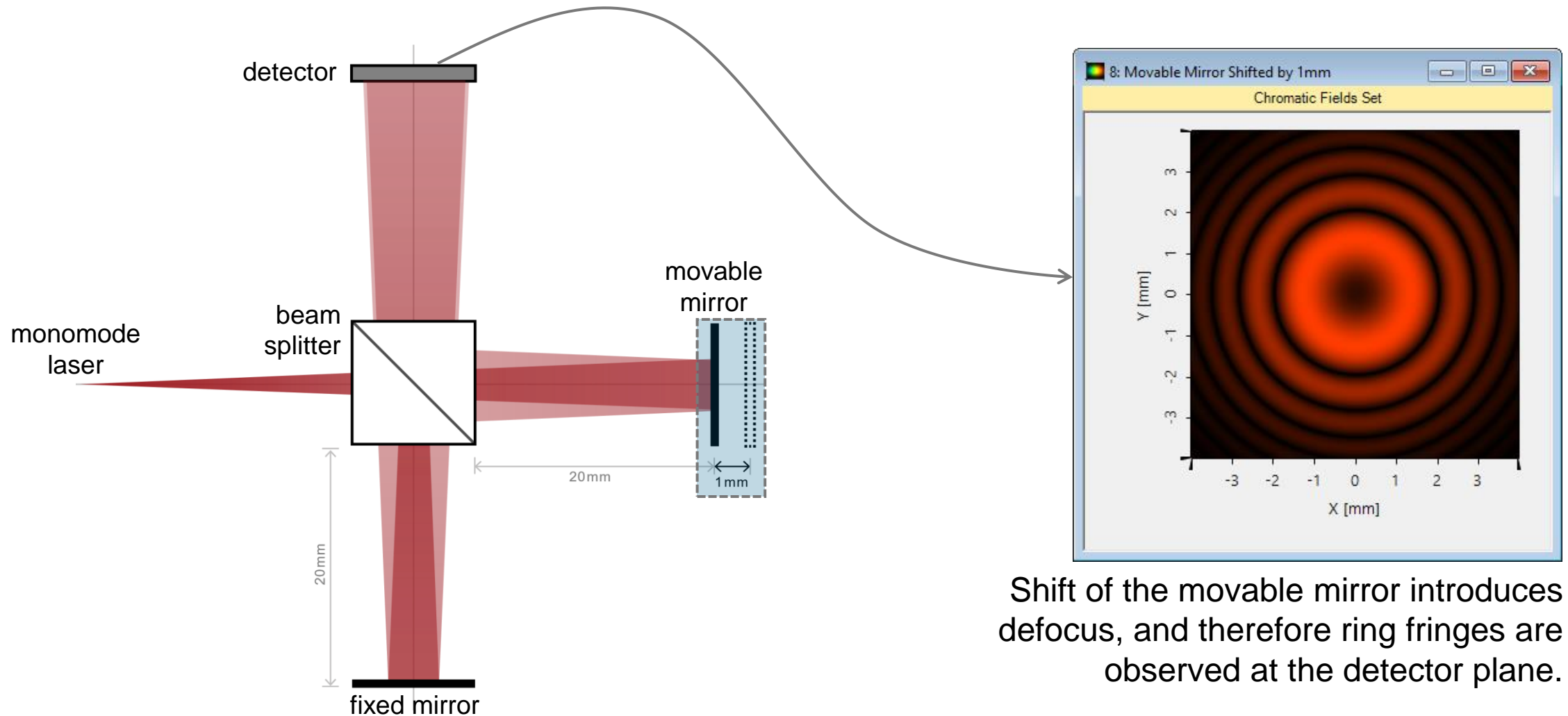


Result with Equivalent Optical Path



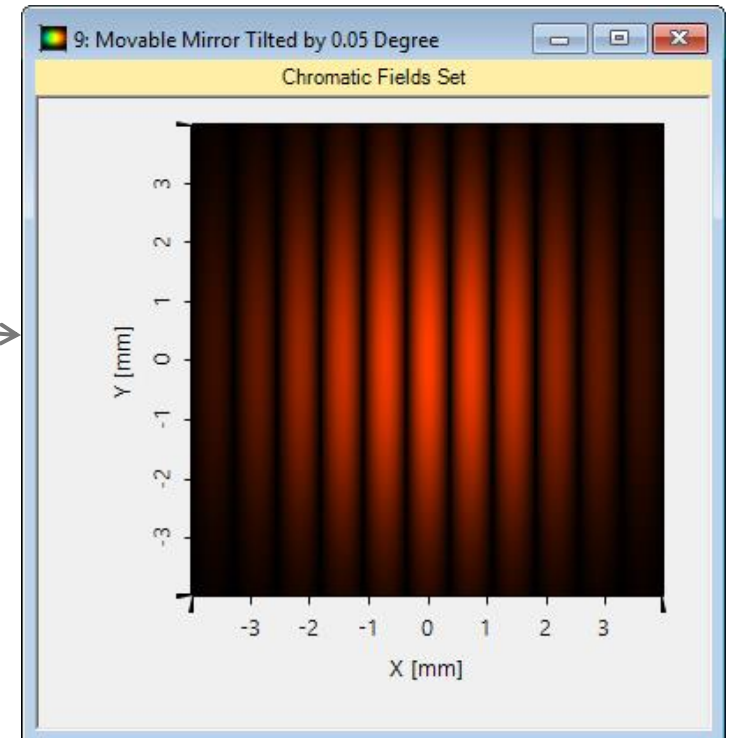
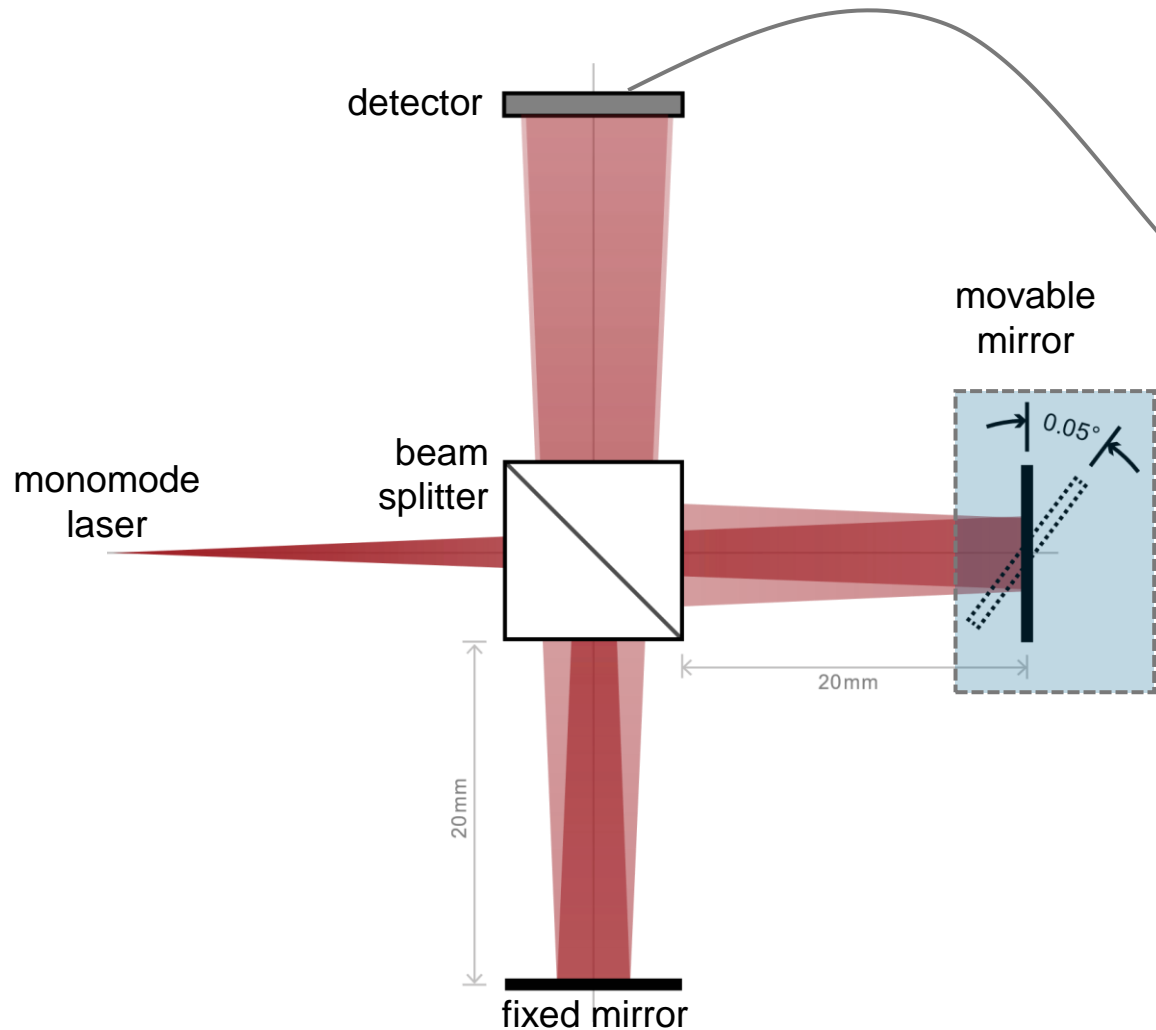
Coherent superposition of two fields reflected from planar mirrors at equivalent-path positions gives no interference fringes.

Result with Shifted Movable Mirror



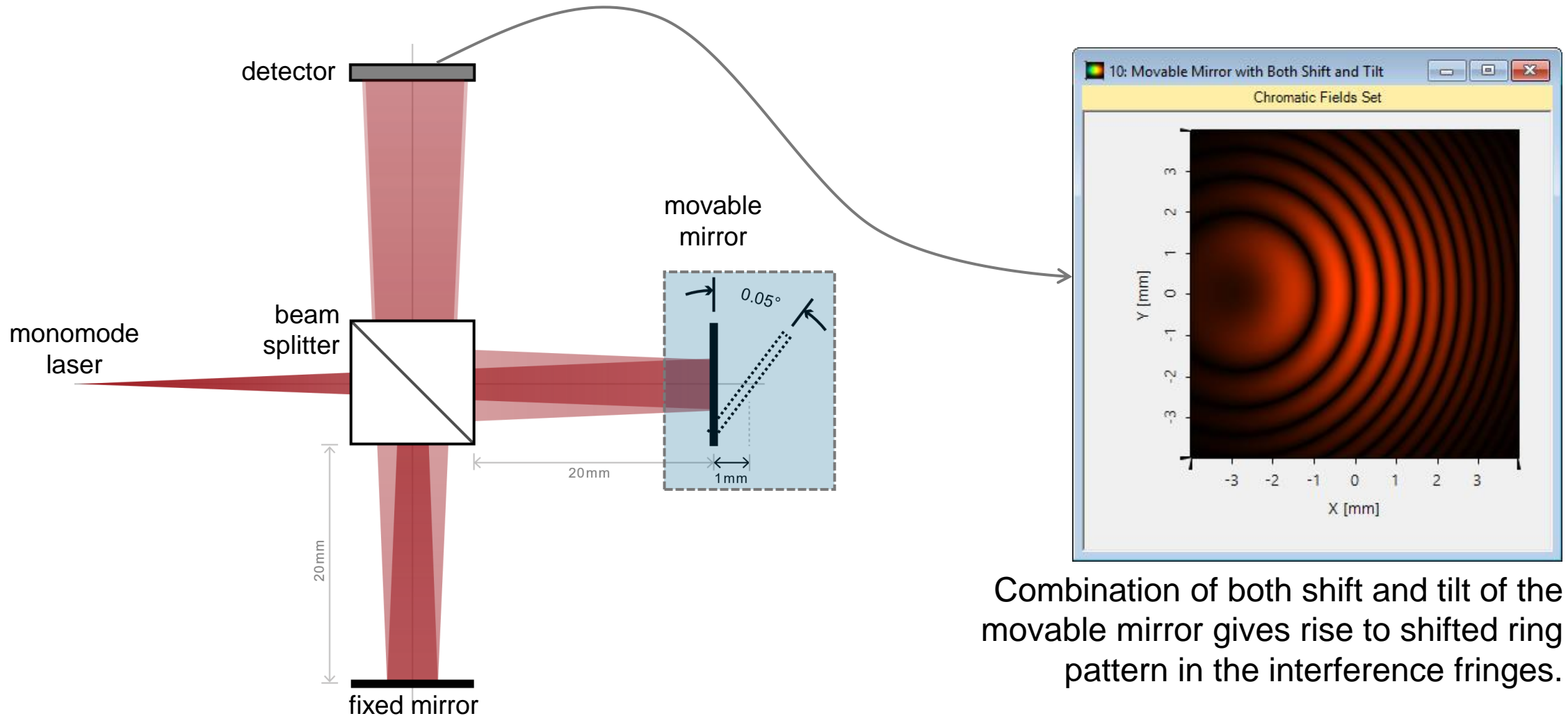
Shift of the movable mirror introduces defocus, and therefore ring fringes are observed at the detector plane.

Result with Tilted Movable Mirror



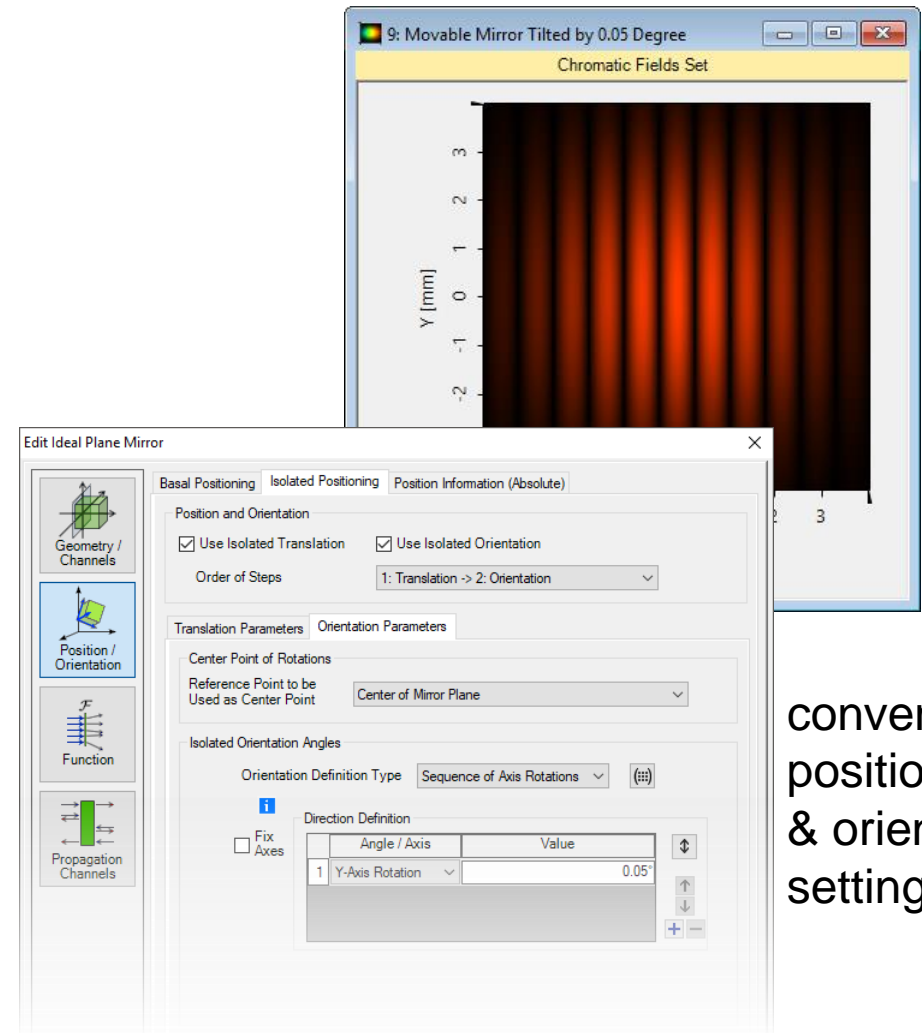
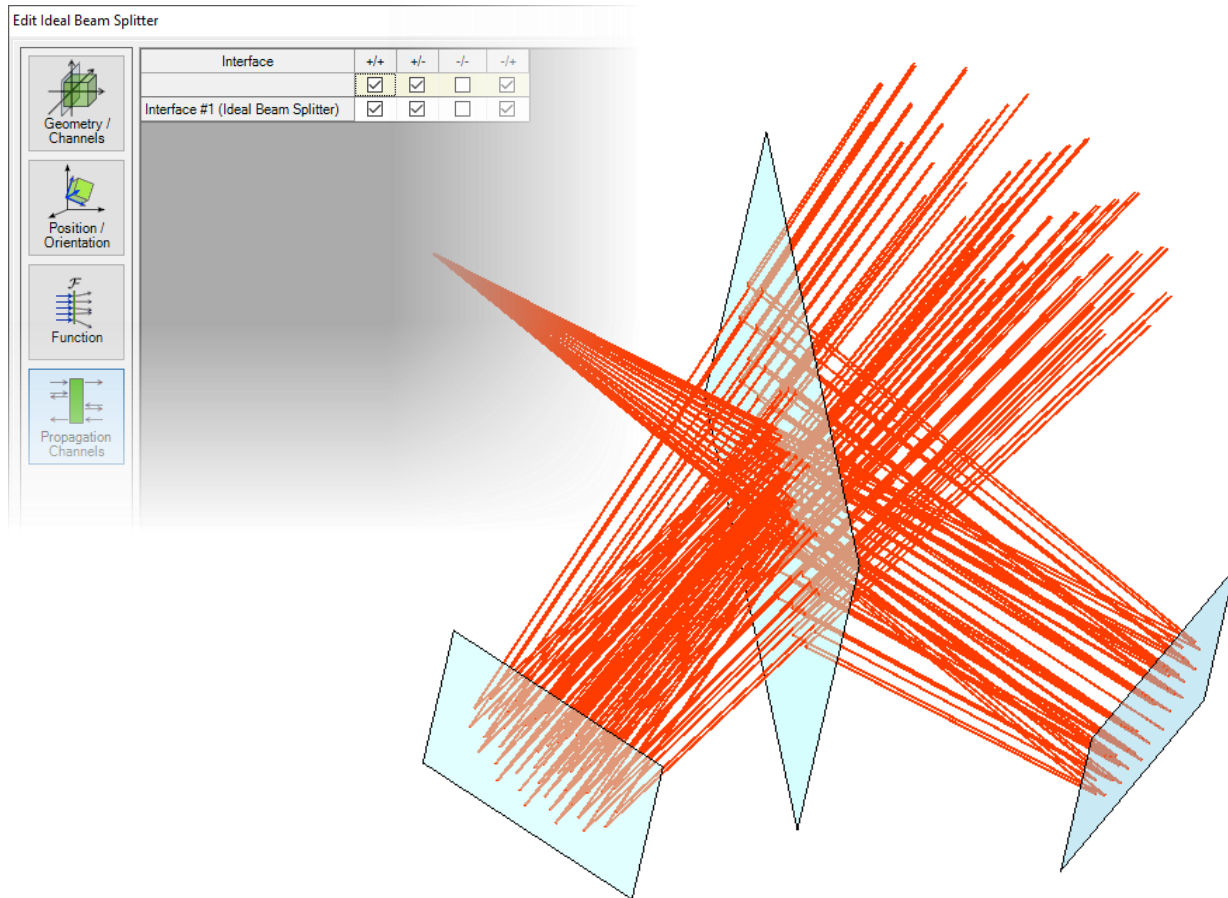
Tilt of the movable mirror leads to parallel striped interference fringes are seen at the detector plane.

Result with Shifted and Tilted Movable Mirror



Peek into VirtualLab Fusion

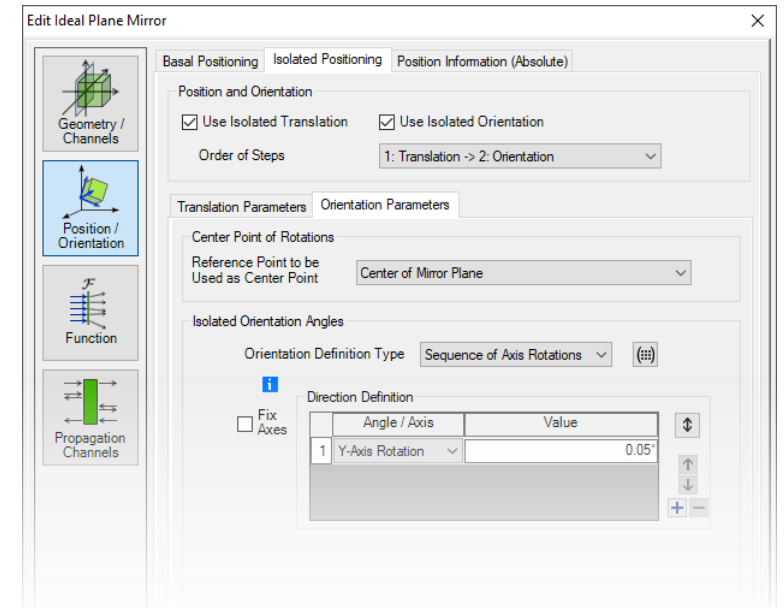
flexible channel control for non-sequential tracing



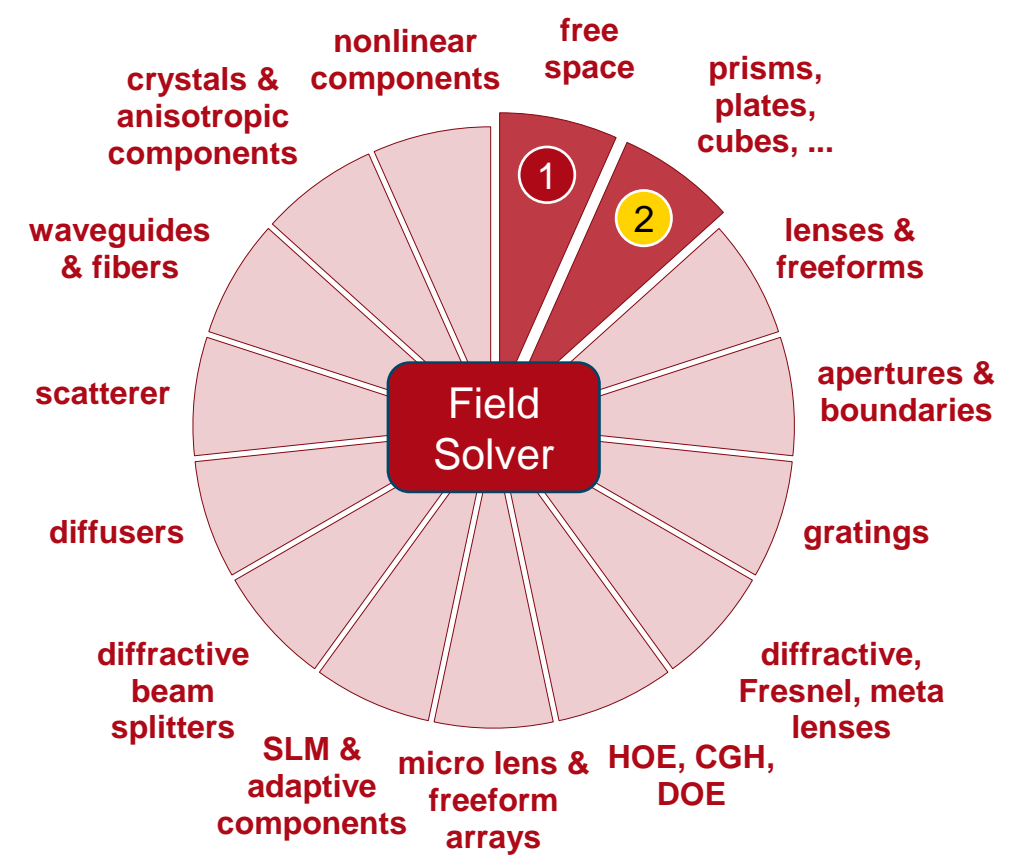
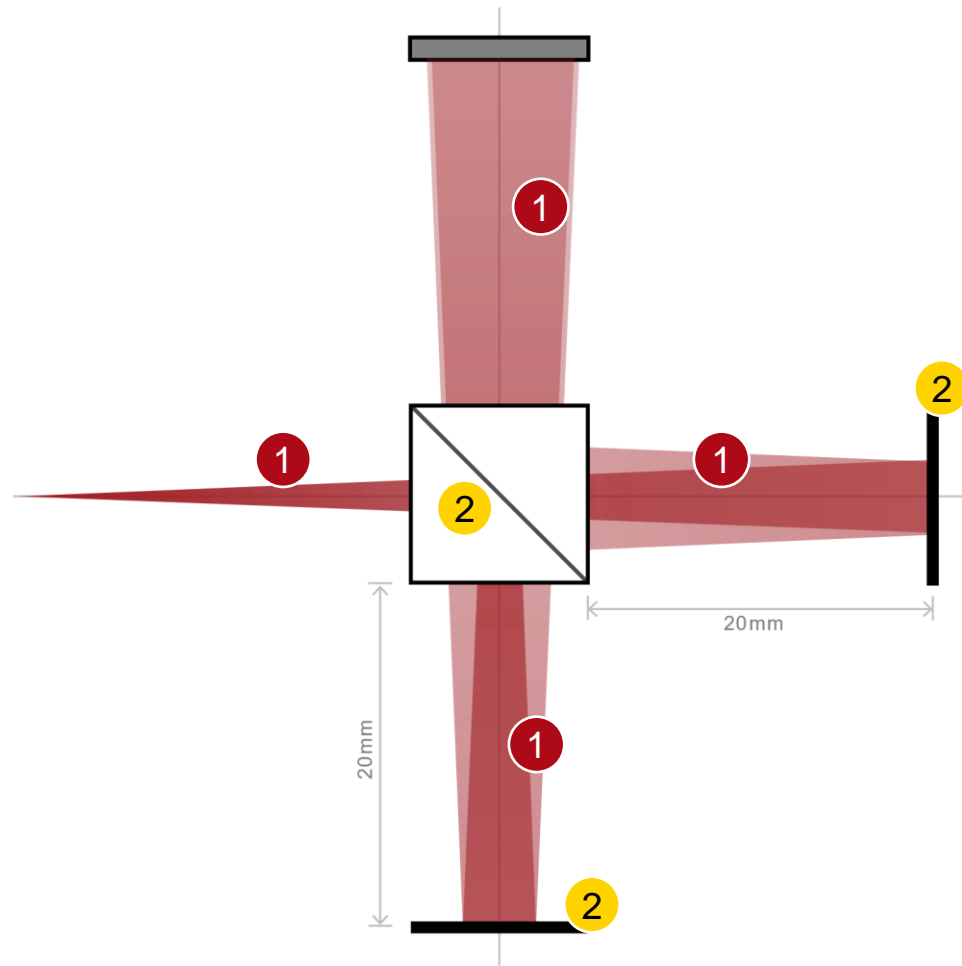
convenient
positioning
& orientation
settings

Workflow in VirtualLab Fusion

- Set up input Gaussian field
 - [Basic Source Models](#) [Tutorial Video]
- Set the position and orientation of components
 - [LPD II: Position and Orientation](#) [Tutorial Video]
- Set the non-sequential channels of components
 - [Channel Configuration for Surfaces and Grating Regions](#) [Use Case]
- Use Parameter Run to check influence/changes
 - [Usage of the Parameter Run Document](#) [Use Case]



VirtualLab Fusion Technologies



idealized component

Document Information

title	Laser-Based Michelson Interferometer and Interference Fringe Exploration
document code	IFO.0001
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further reading	<ul style="list-style-type: none">- Mach-Zehnder Interferometer- Full-Field Optical Coherence Scanning Interferometry- Fizeau Interferometer for Optical Testing