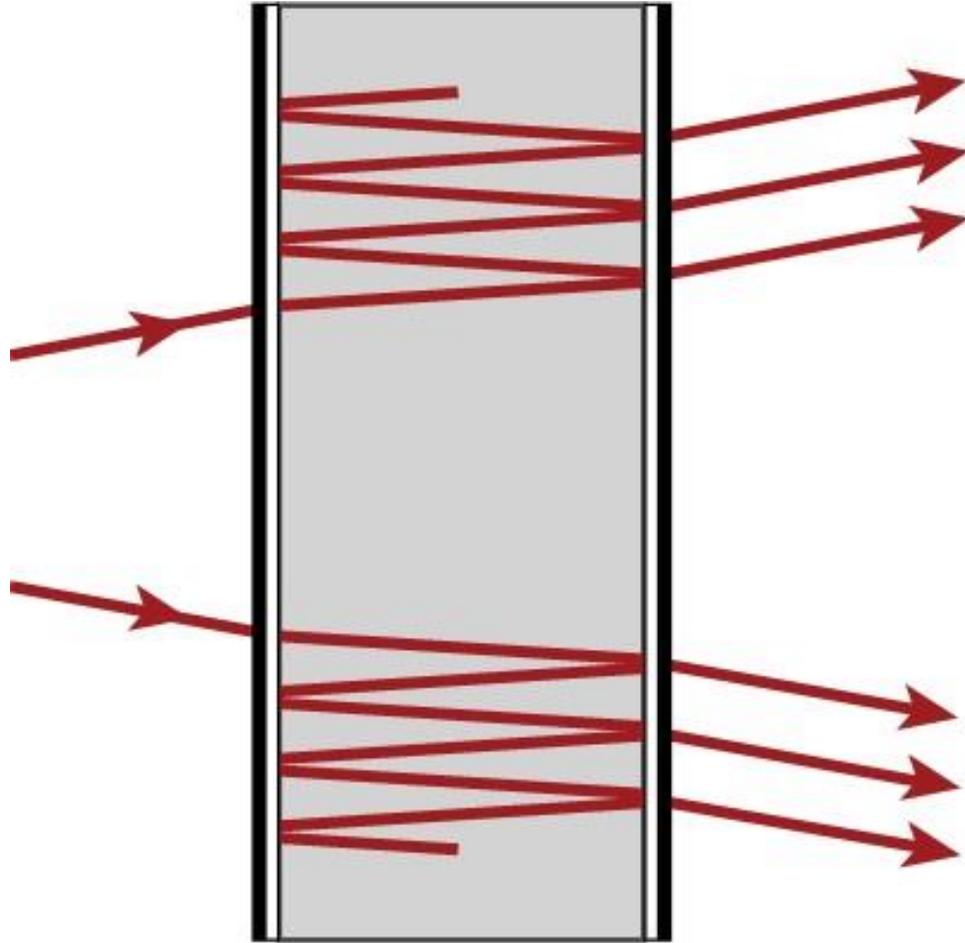


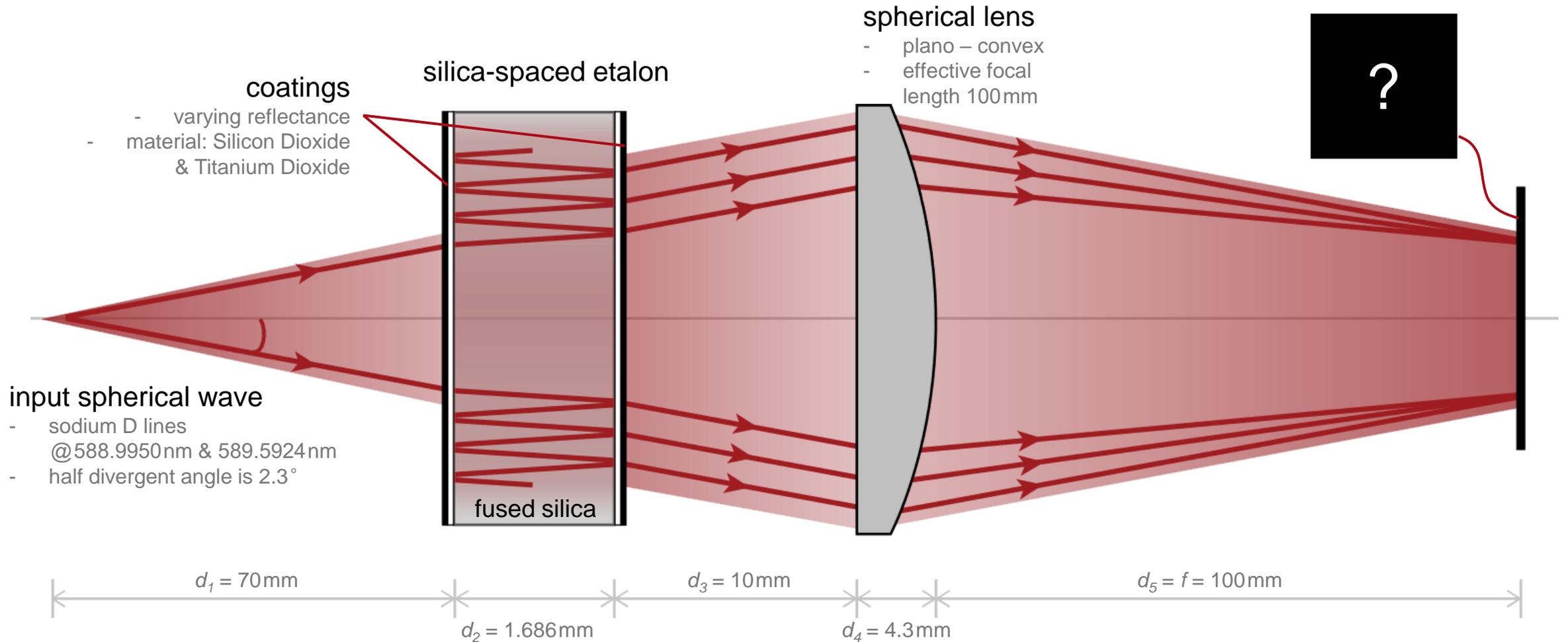
# Examination of Sodium D Lines with Fabry-Pérot Etalon

# Abstract

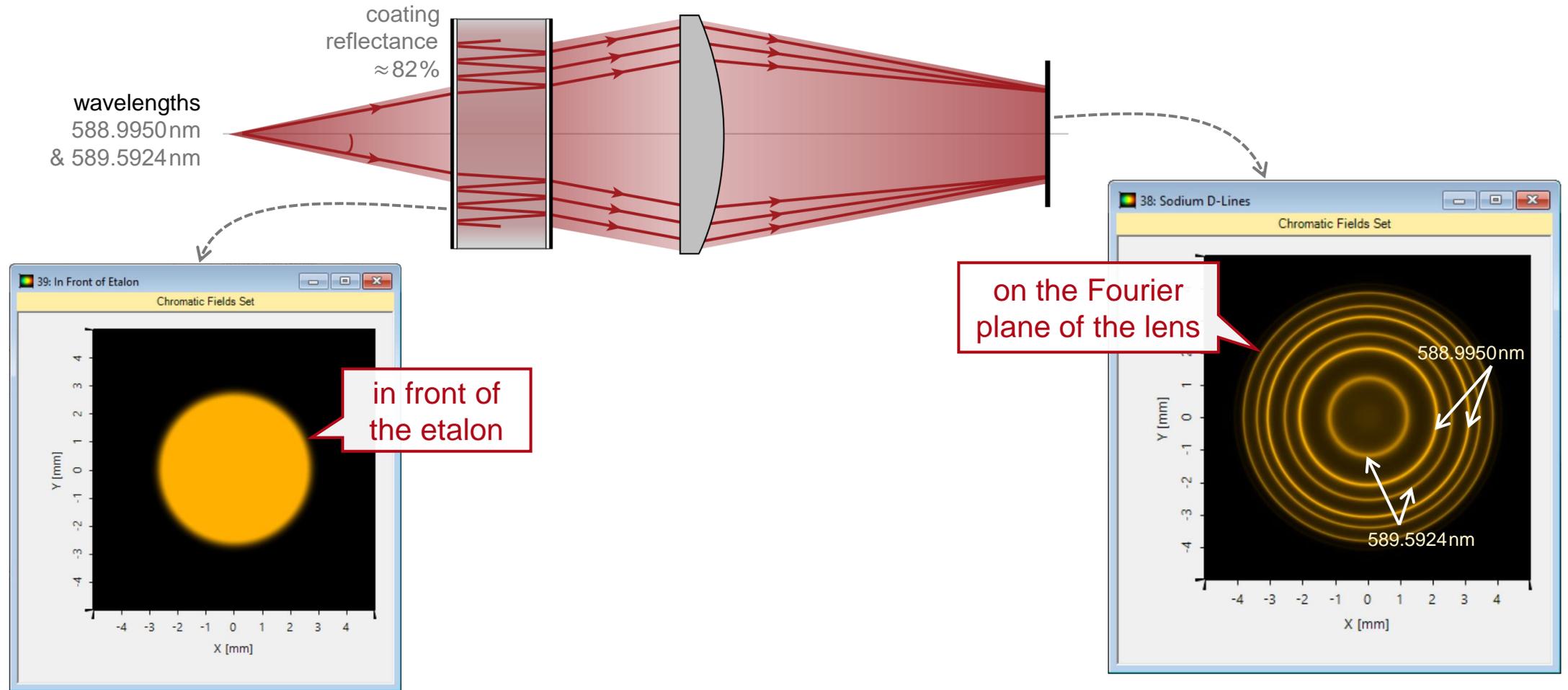


Fabry-Pérot etalons are widely used in laser resonators and spectroscopy for wavelength selection. Typically they are composed of two high-reflection (HR) coated surfaces with air or glass in between. In this example, an optical metrology system with a silica spaced etalon is set up to measure the sodium D lines in VirtualLab Fusion. With the non-sequential field tracing technique, the interference due to multiple reflections in the etalon is fully considered, and the influence from the coating reflectance on the fringe contrast is investigated.

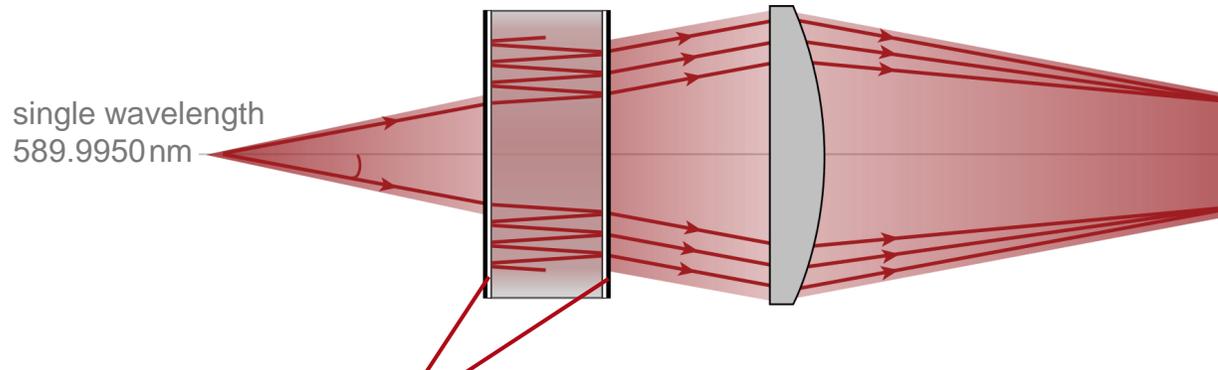
# Modeling Task



# Visualization of Both Spectrum Lines

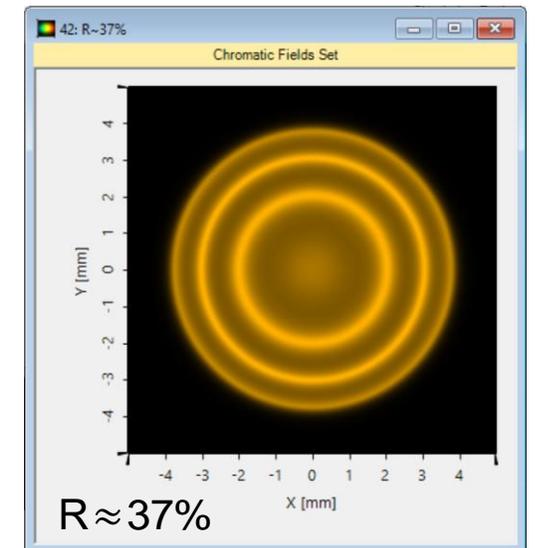
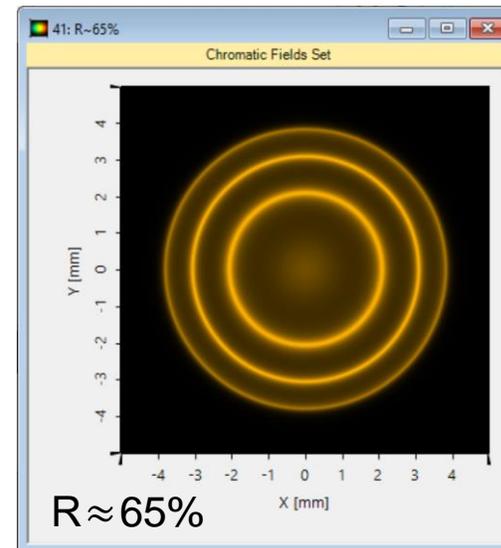
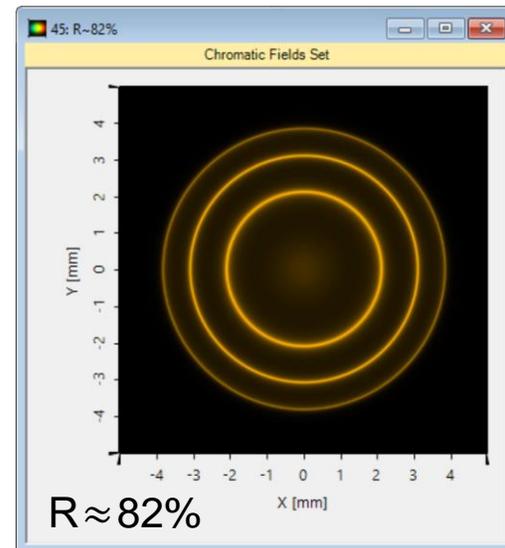


# Finesse vs. Coating Reflectance



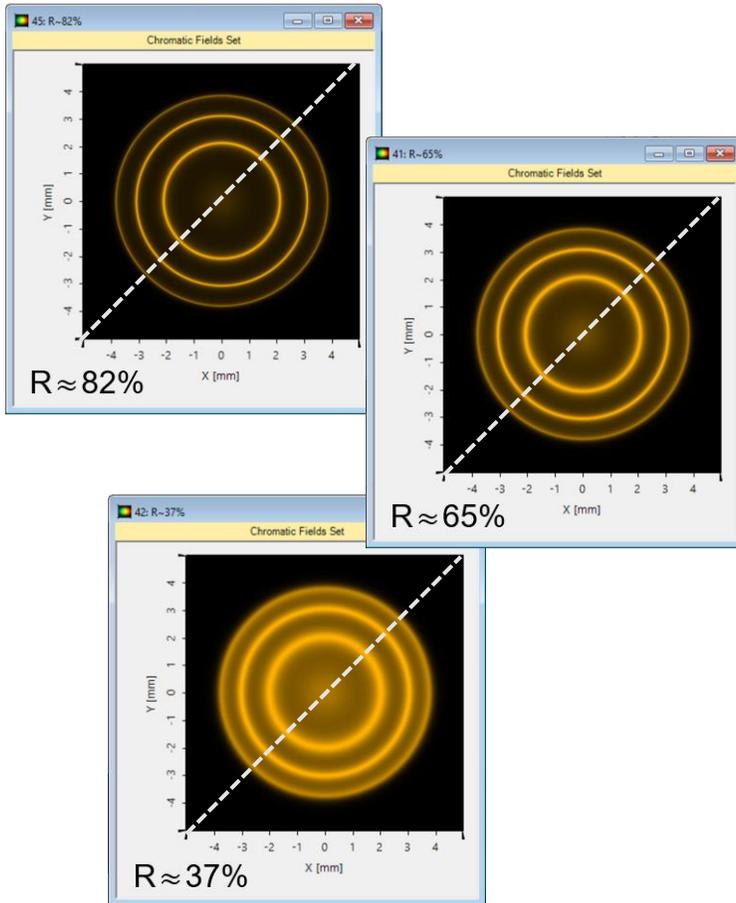
Sharpness of the interference fringes depends on the reflectance of the coatings on the etalon.

- coatings
- varying reflectance: 82%, 65%, 37%

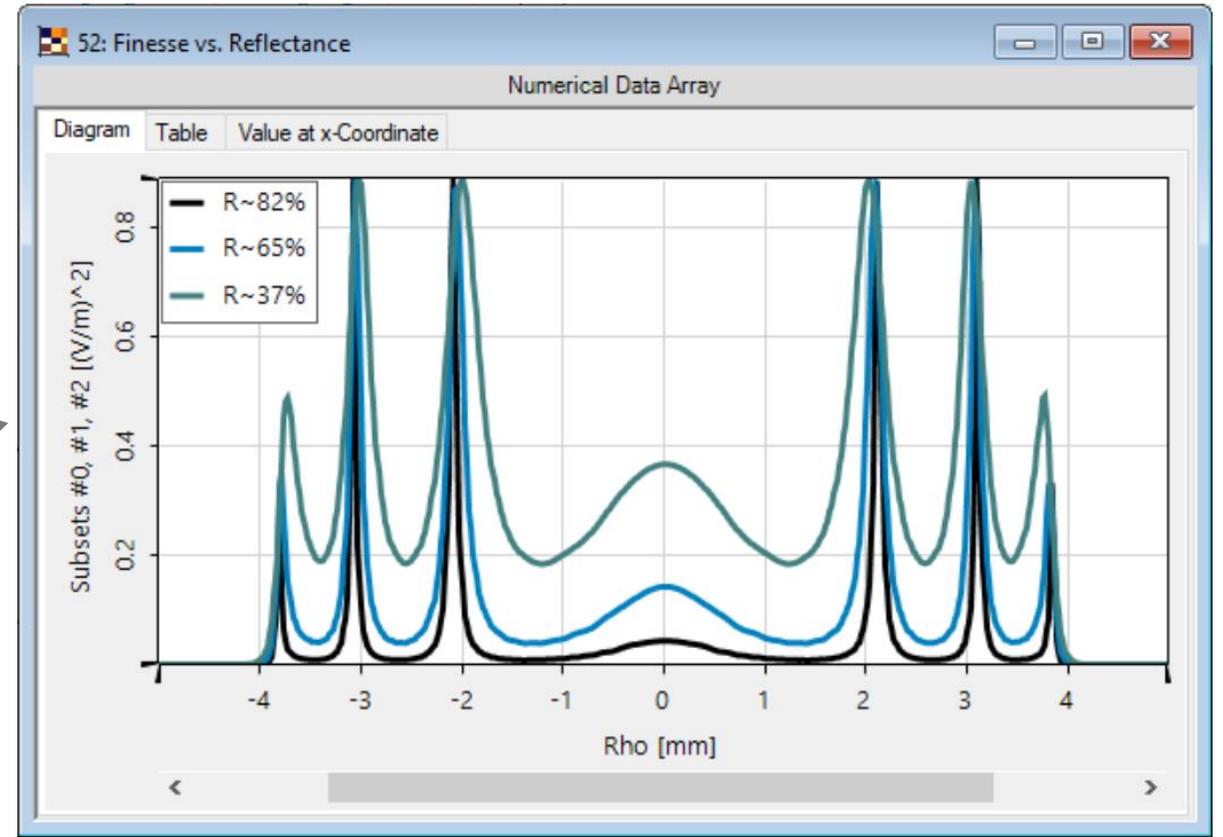


# Finesse vs. Coating Reflectance

the higher the reflectance, the higher the finesse

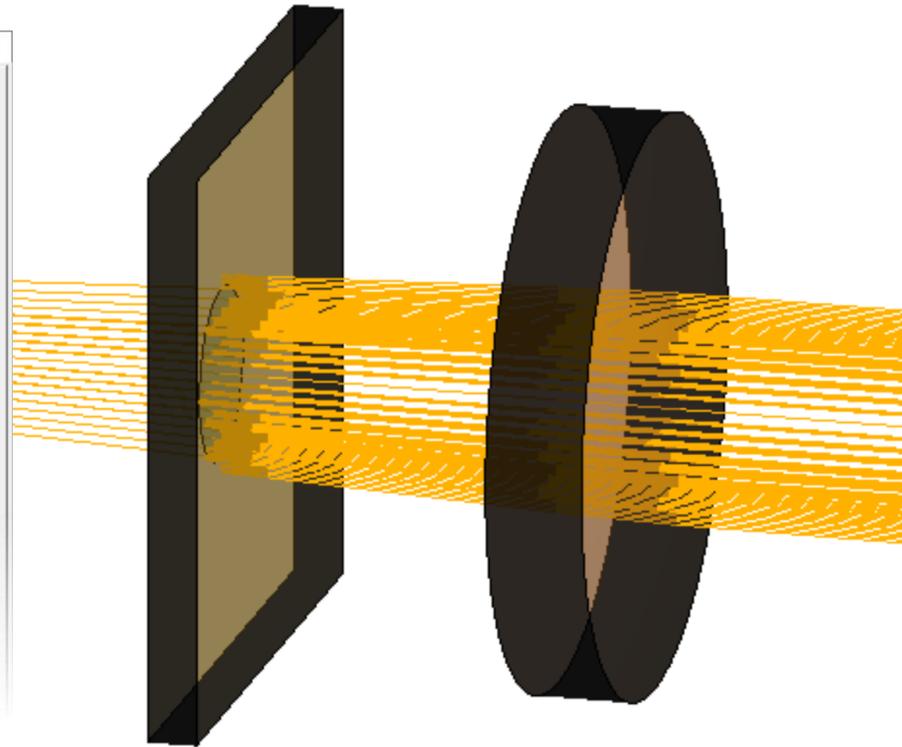
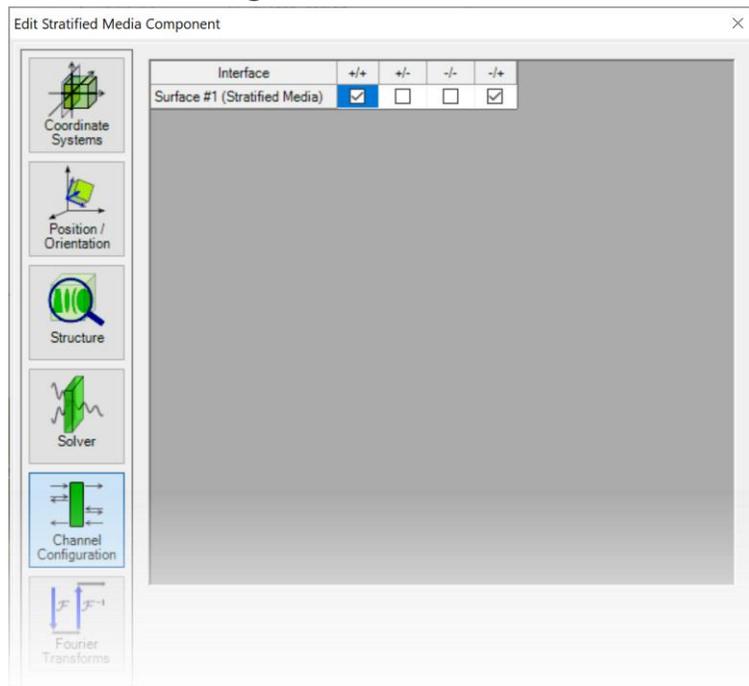


1D measurements along the radial direction



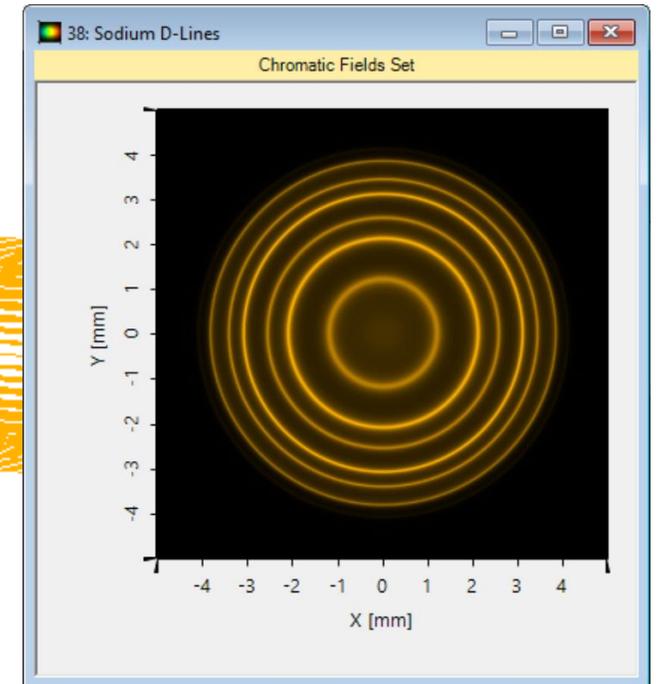
# Peek into VirtualLab Fusion

flexible configuration of channels



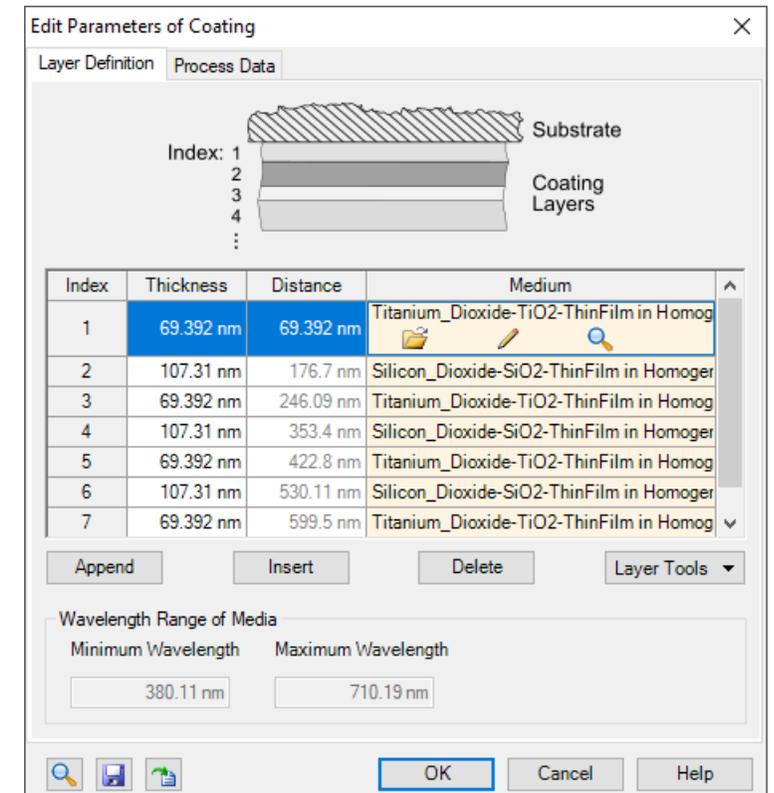
ray tracing analysis and  
visualization of the optical system

visualization of interference

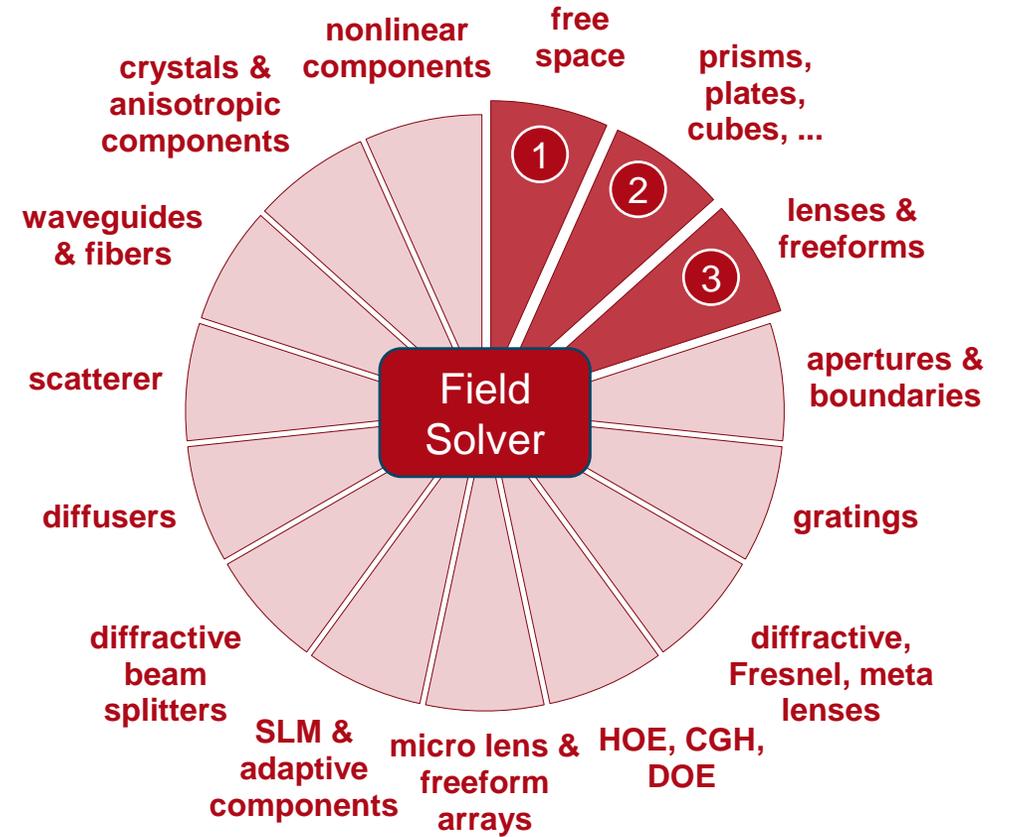
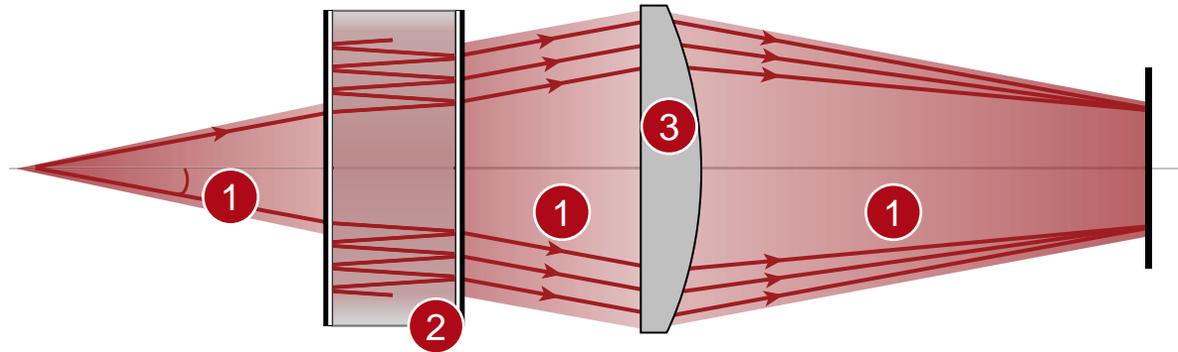


# Workflow in VirtualLab Fusion

- 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 HR coating
  - [Catalogs III: Coatings Catalog](#) [Tutorial Video]
- Set the non-sequential channels of components
  - [Channel Configuration for Surfaces and Grating Regions](#) [Use Case]



# VirtualLab Fusion Technologies



# Document Information

title	Examination of Sodium D Lines with Etalon
document code	IFO.0012
version	2.0
edition	VirtualLab Fusion Basic
software version	2020.1 (Build 1.202)
category	Application Use Case
further reading	<ul style="list-style-type: none"><li>- <a href="#"><u>Modeling of Etalon with Planar or Curved Surfaces</u></a></li><li>- <a href="#"><u>Coherence Measurement Using Michelson Interferometer and Fourier Transform Spectroscopy</u></a></li></ul>