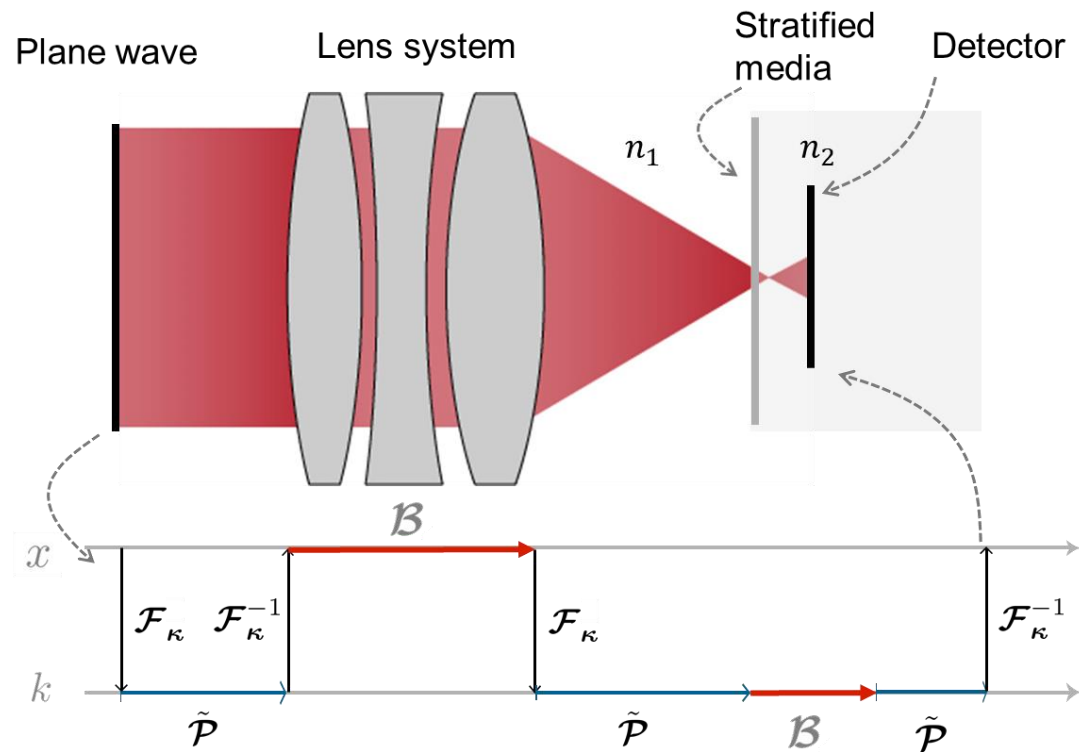VLF Demo

Fourier Transforms in Immersion Objective System by using Stratified Media Component
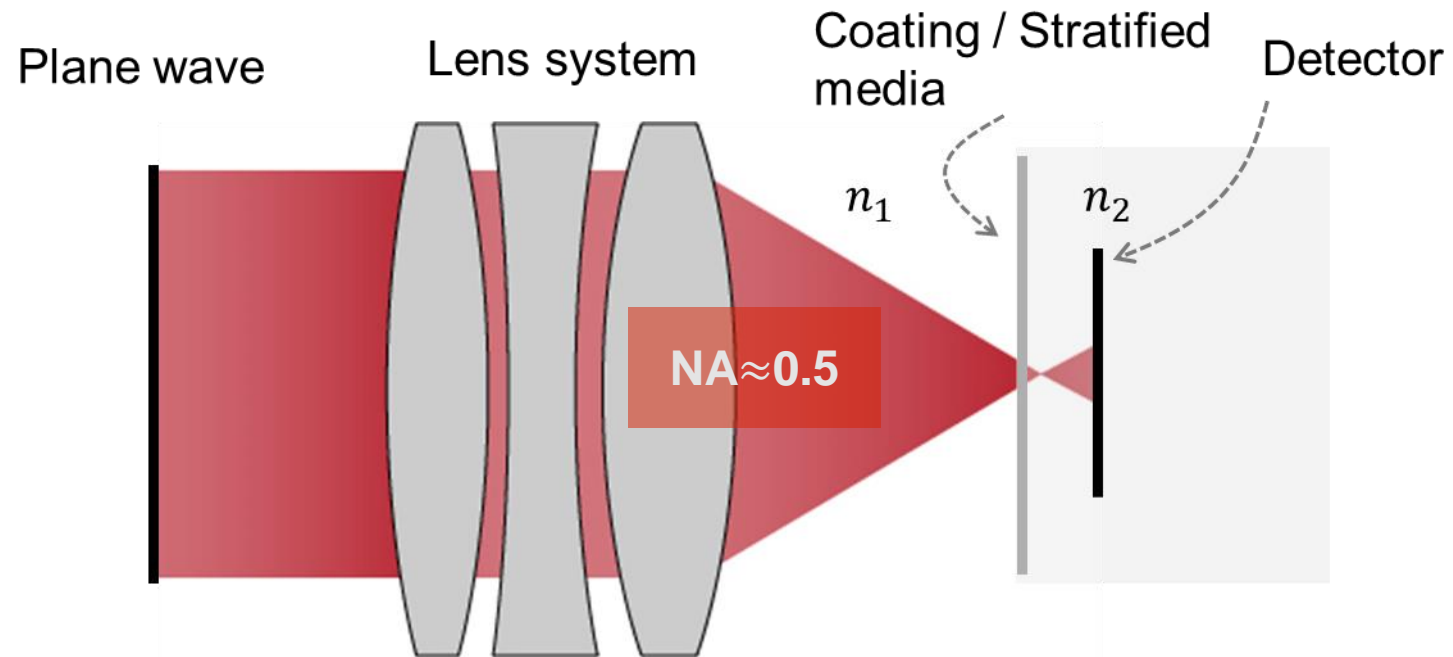
Abstract

In this demo, we illustrate the Fourier Transforms in an immersion objective system, which reveals the advantages of the Stratified media in time-consuming and calculation accuracy.
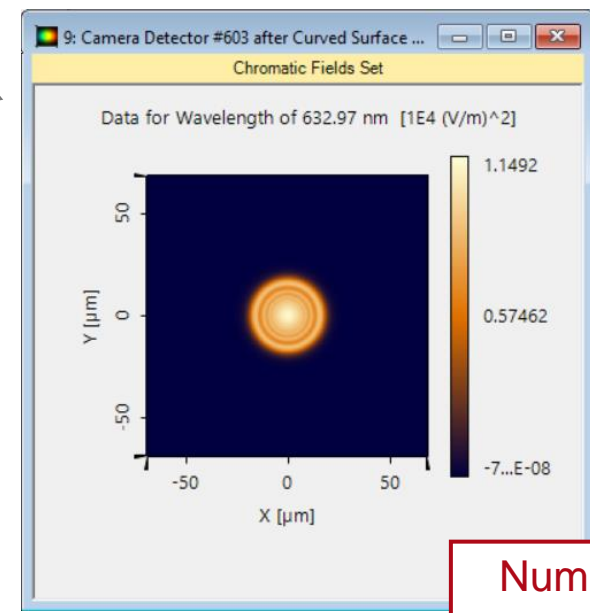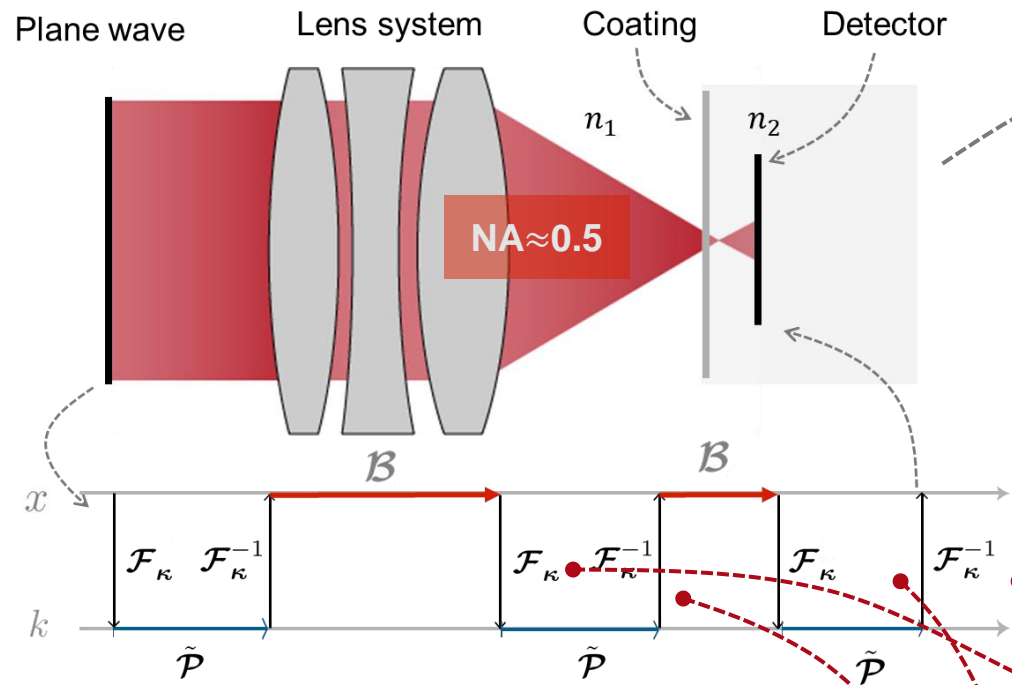
Task Description

In the immersion objective system, we show
- automatically selection of Fourier transforms when a coating / stratified media place at the focal range, and
- comparison of calculation time consuming and sampling requirement .
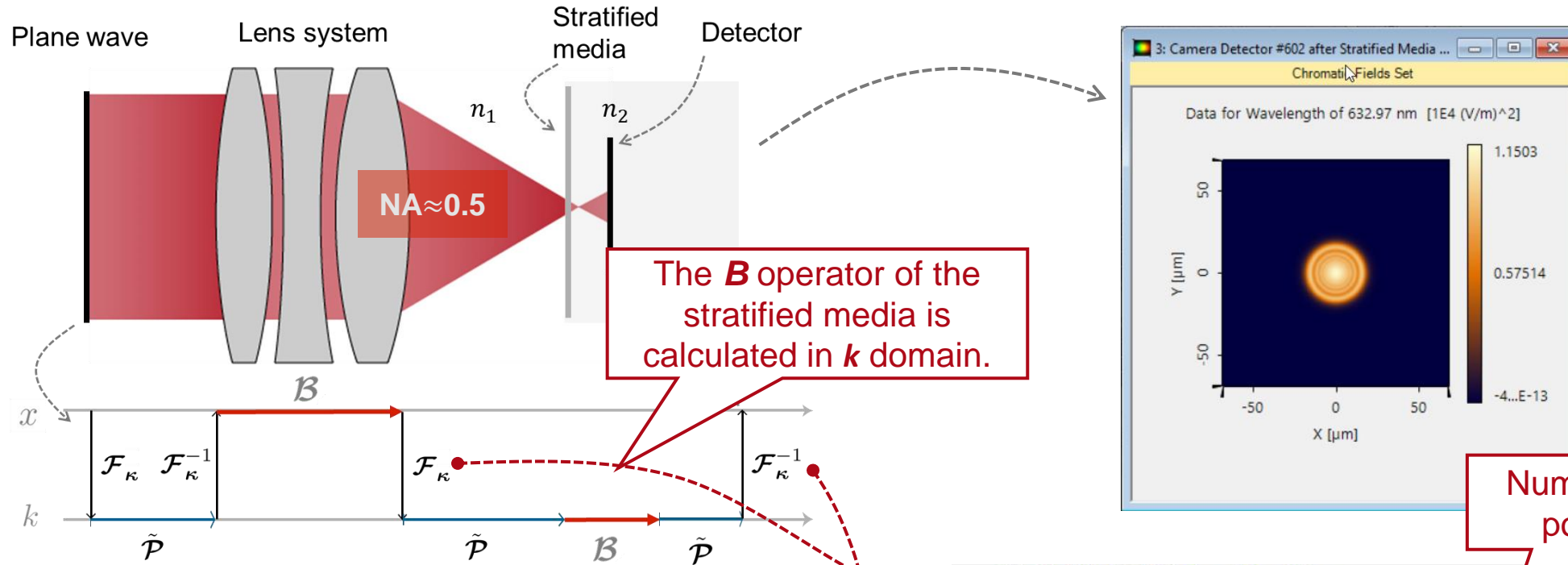
Simulation with Regular Coating

Simulation with Stratified Media

Plane wave

Lens system

Stratified media

Detector

n_1

n_2

NA≈0.5

The **B** operator of the stratified media is calculated in **k** domain.

$\mathcal{B}$

x

$\mathcal{F}_\kappa$ $\mathcal{F}_\kappa^{-1}$

$\mathcal{F}_\kappa$

$\mathcal{F}_\kappa^{-1}$

k

$\tilde{\mathcal{P}}$

$\tilde{\mathcal{P}}$

$\mathcal{B}$

$\tilde{\mathcal{P}}$

Total Simulation Time: 00:00:01.1626441

3: Camera Detector #602 after Stratified Media ...

Chromatic Fields Set

Data for Wavelength of 632.97 nm [1E4 (V/m)^2]

1.1503

0.57514

-4...E-13

Y [µm]

X [µm]

Number of sampling points required.

------- "Stratified Media" #9 (Surface #1) modeling -------
Pointwise Fourier Transform is finished (gridless data, 1027 sampling points). Duration = 00:00:00.0029919
   Geometric power = 373.63 % (threshold = 100 %).
Free space propagation in k-domain is finished. (Duration = 00:00:00)
B-Operator Surface #1 (+/+) ["Stratified Media" #9] is finished. (Duration = 00:00:00.0019950)

------- Propagation to Camera Detector #602 -------
Free space propagation in k-domain is finished. (Duration = 00:00:00.0009971)
Inverse Fast Fourier Transform is finished (gridded data, (503; 503) sampling points). Duration = 00:00:00.0614566
   Geometric power = 3.8693% (threshold = 100%).
******* Source mode #1 is finished. (Duration = 00:00:00.2900443) *******

Document Information

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VL version used for simulations	2020.1 (Build 1.238)
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