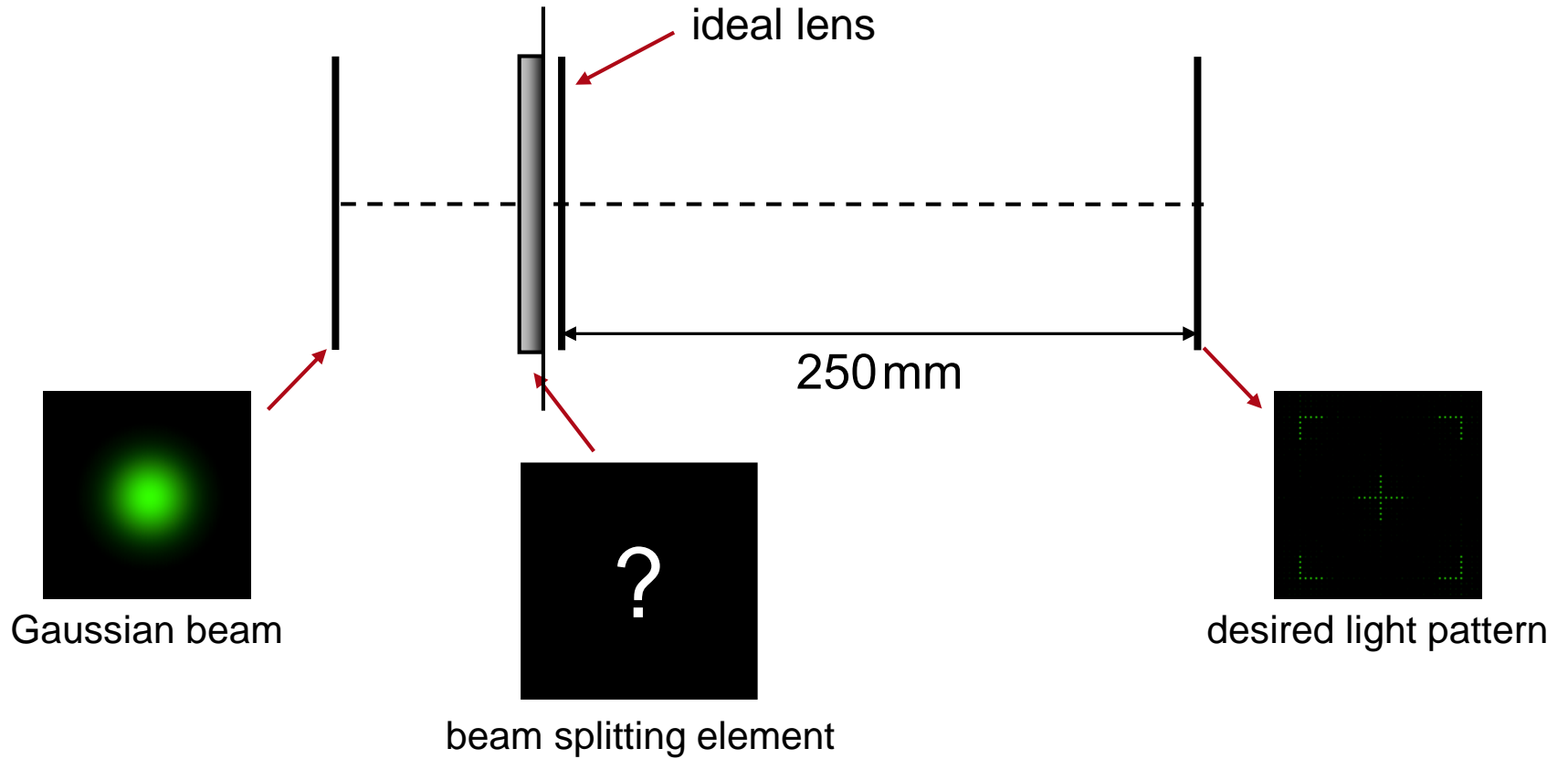


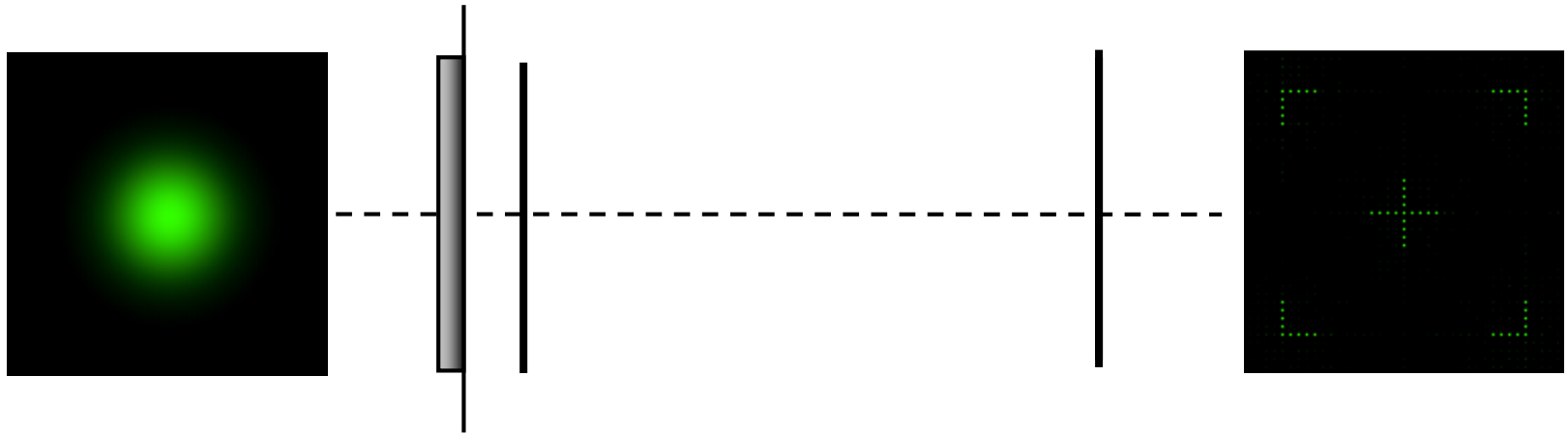
Light Shaping > Diffractive Optics

Design & Optimization of Beam Splitting Element for Generating a 2D Light Mark

Task Illustration

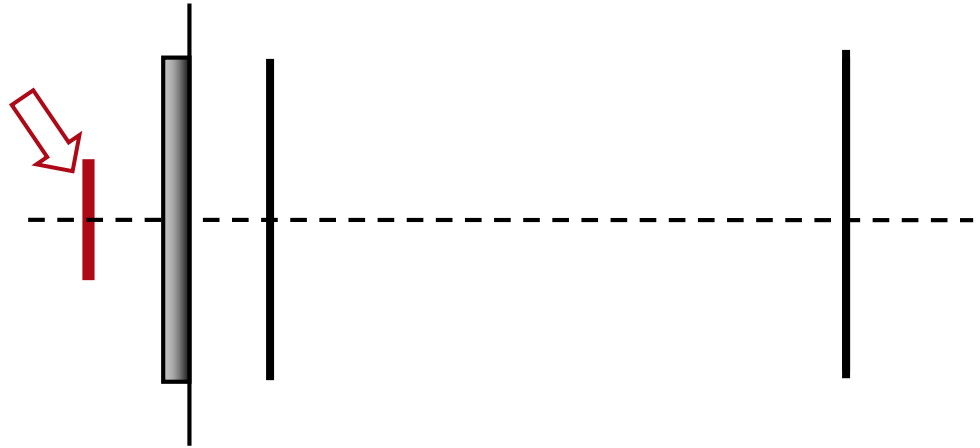
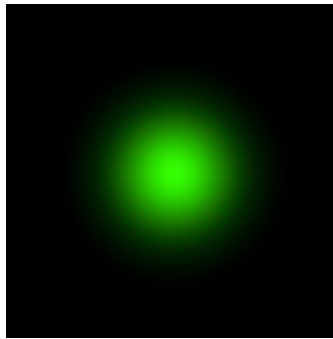


Highlights



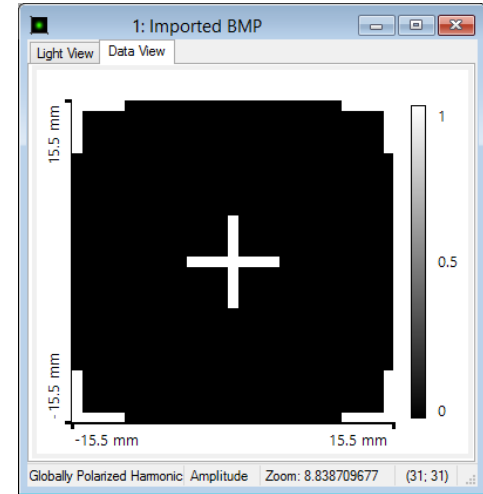
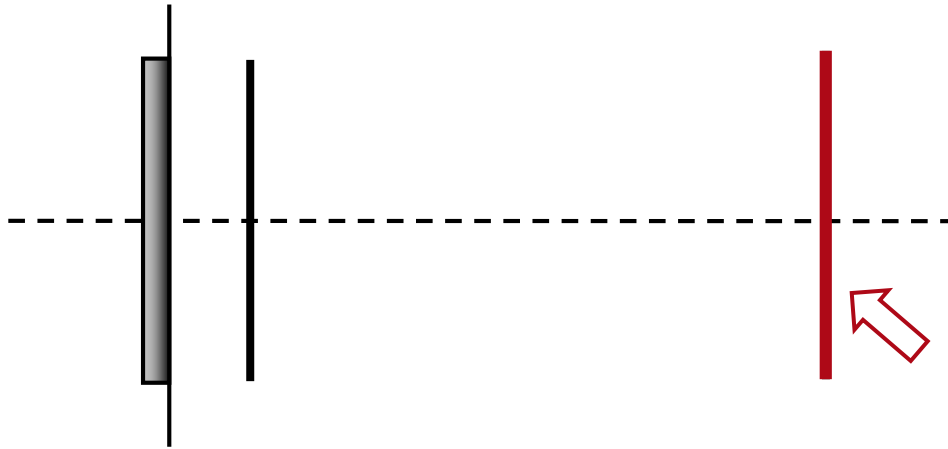
user-friendly guided design of a beam splitting element for arbitrary target pattern generation

Specification: Illuminating Beam



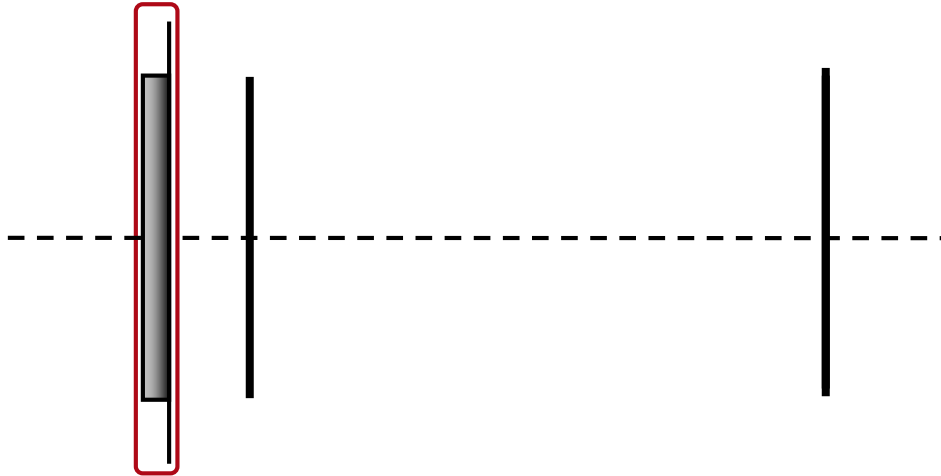
Parameter	Description / Value & Unit
type/number	Gaussian wave
coherence/mode	single Hermite Gaussian (0,0) mode
wavelength	531.85nm
polarization	linear in x-direction (0°)
waist radius (1/e ²)	500μm×500μm

Specification: Desired Target Pattern



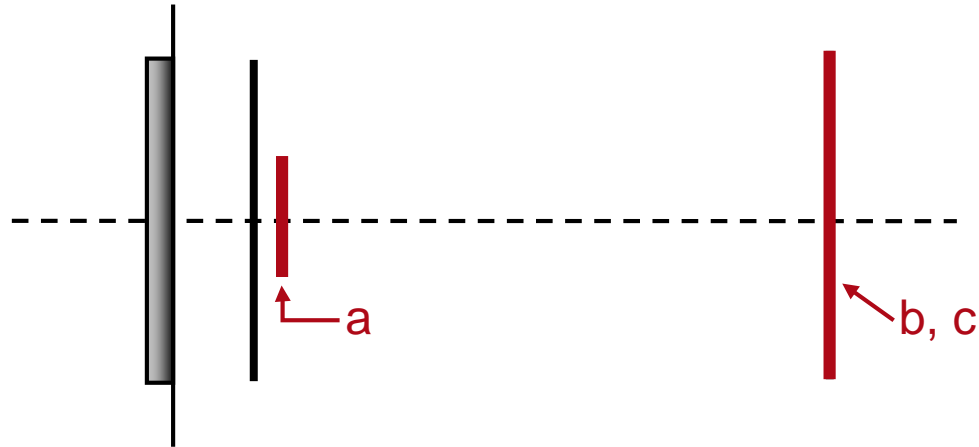
Parameter	Description / Value & Unit
type/number	imported bitmap file
diffraction order distance	1 mm × 1 mm

Specification: Design Parameter



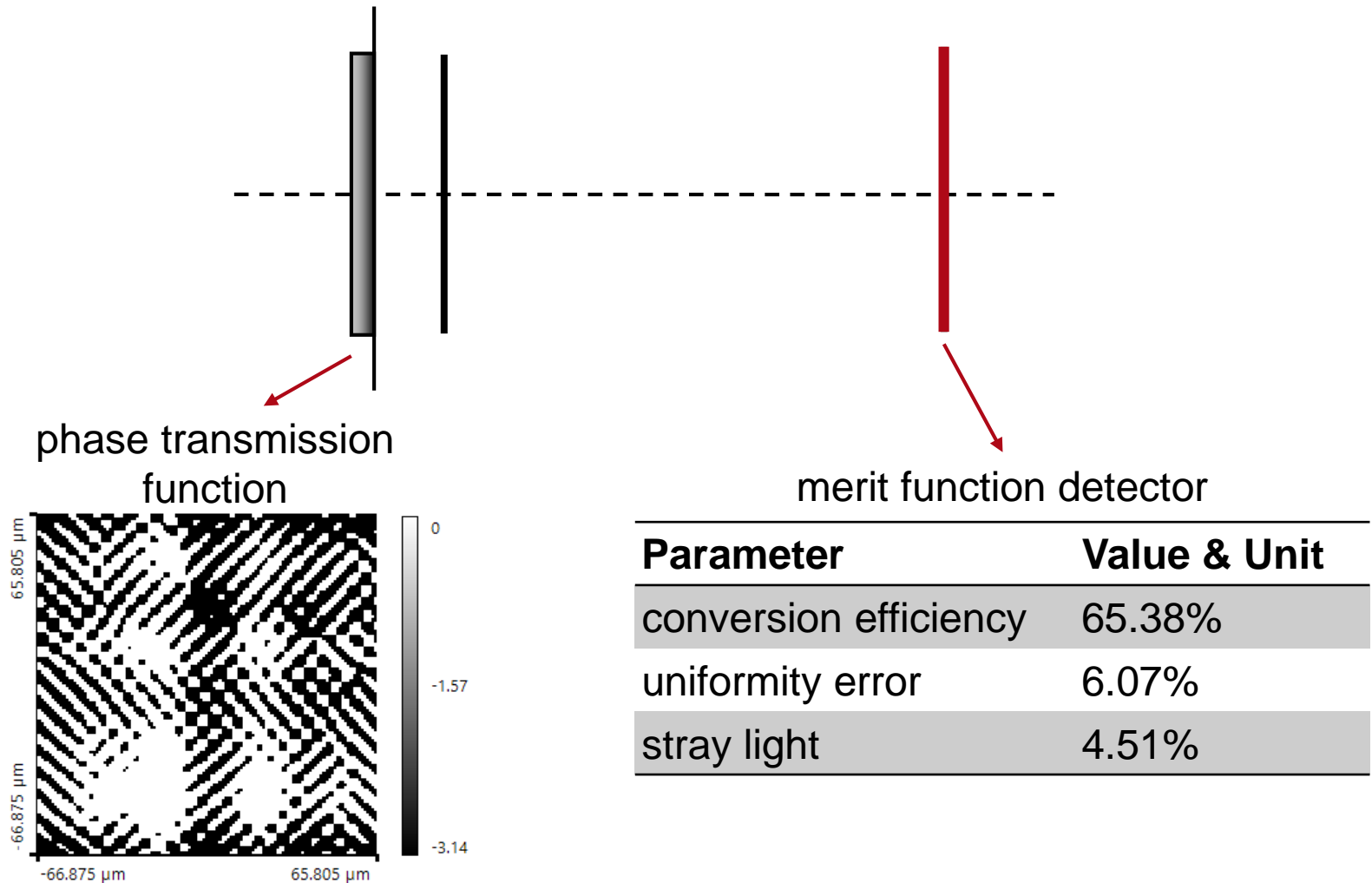
Parameter	Description / Value & Unit
diameter of diffractive element	1 mm × 1 mm
quantized phase levels	2
type of setup	1f-setup (ideal lens, focal length 250mm)
pixel size	> 0.5 μm
desired conversion efficiency	> 60%
desired stray light	< 10%
desired uniformity error	< 10%

Specification: Detectors

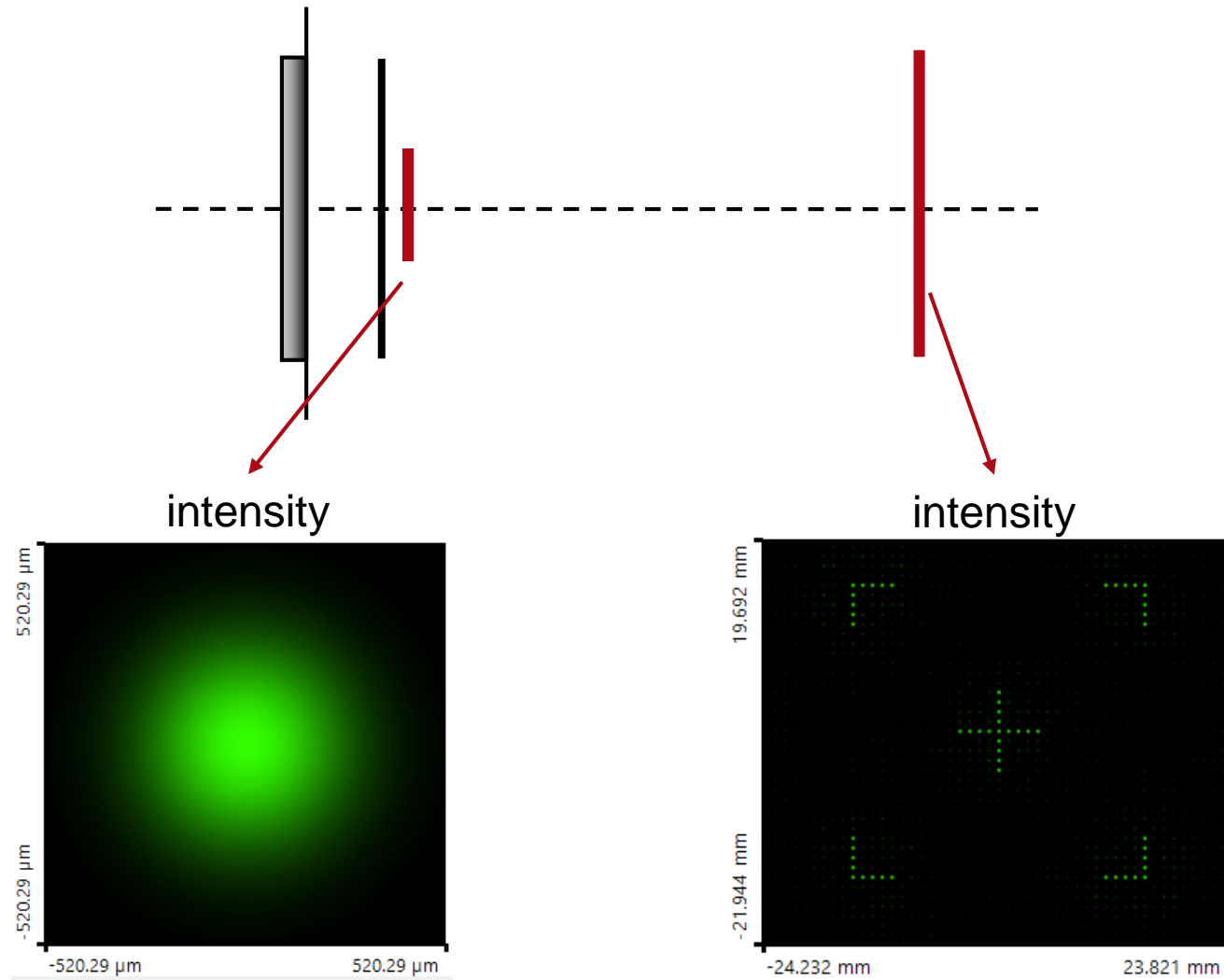


Position	Modeling Technique	Detector/Analyzer
a	field tracing	2D intensity distribution
b	field tracing	2D intensity distribution
c	field tracing	merit function (desired design performance)

Result: Diffractive Beam Shaper Design



Result: Field Tracing



Document & Technical Info

code	DO.0002
version of document	1.0
title	Design & Optimization of Beam Splitting Element for Generation of 2D Light Mark
category	Diffraction Optics (DO)
created by	Zongzhao Wang (LightTrans)
used VL version	7.0.0.29

Specifications of PC Used for Simulation

Processor	i7-4700MQ (4 CPU cores)
RAM	16GB
Operating System	Windows 10