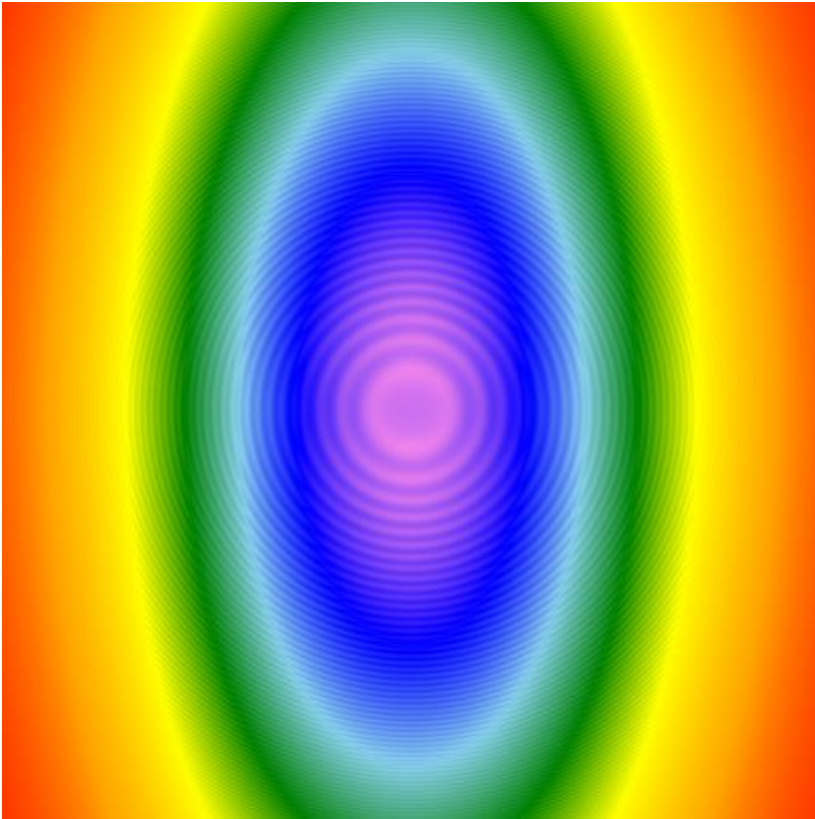


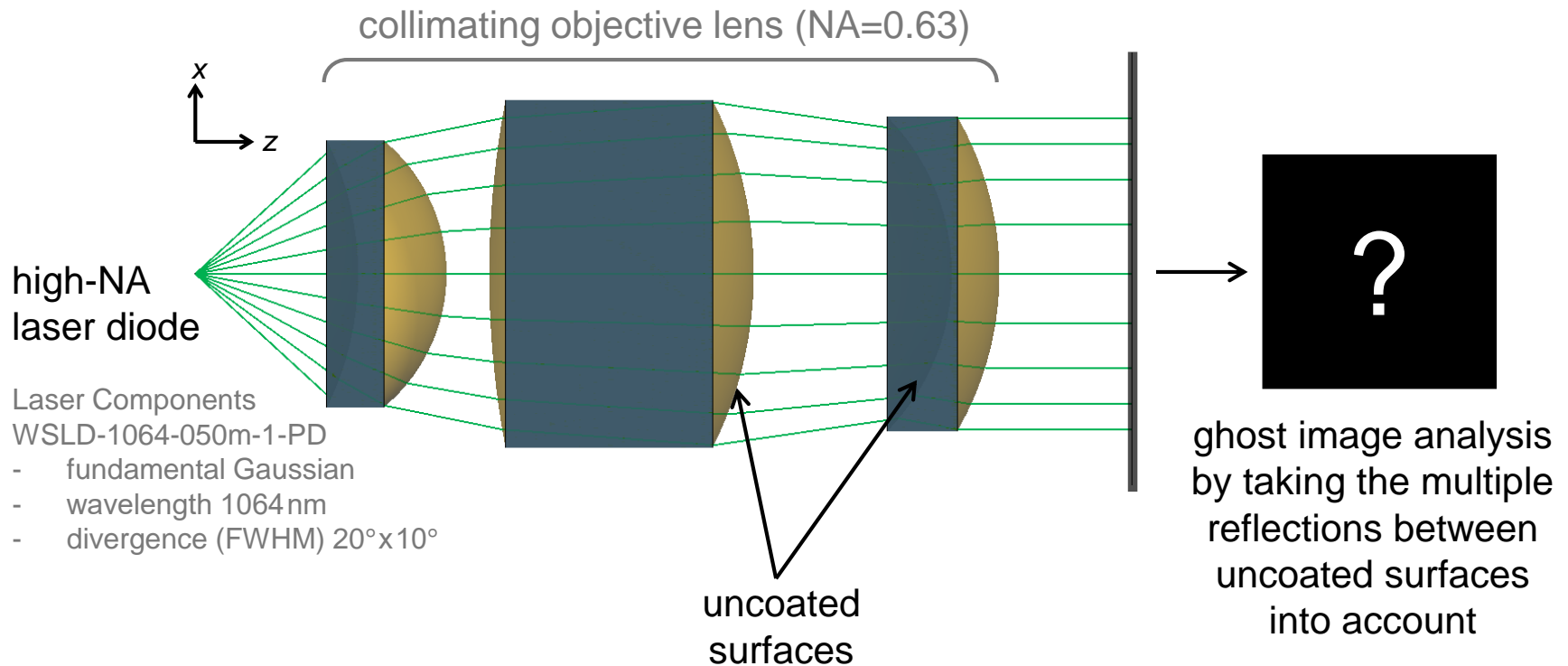
# Investigation of Ghost Image Effects in Collimation System

# Abstract

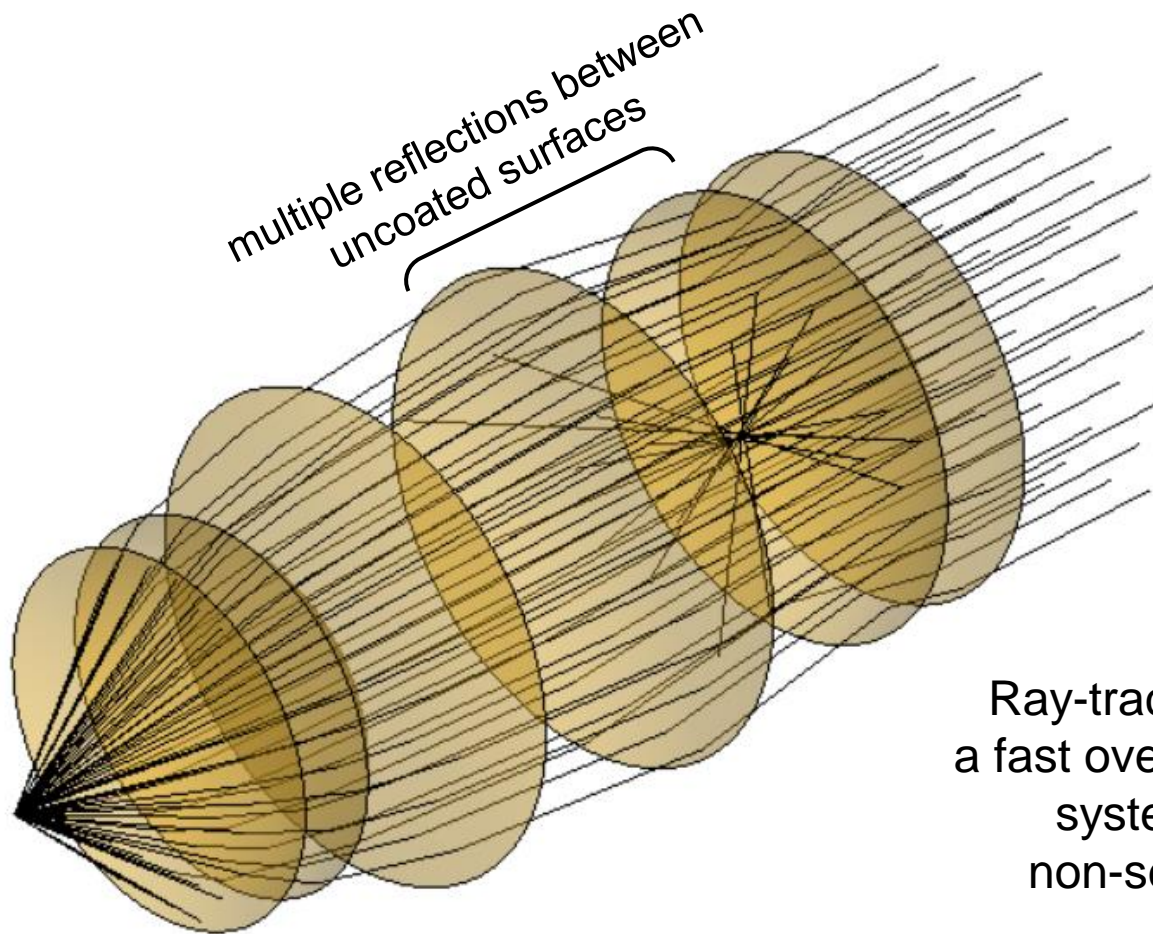


In any optical system there are always stray light which causes ghost images. Stray light may come from different effect, like undesired reflections and scattering. A collimation lens system for high-NA laser diode is taken as an example. By using the non-sequential tracing technique in VirtualLab, the reflections between uncoated surfaces are studied, and it is shown that the multiple reflections may cause interference fringes in the collimated beam.

# Modeling Task

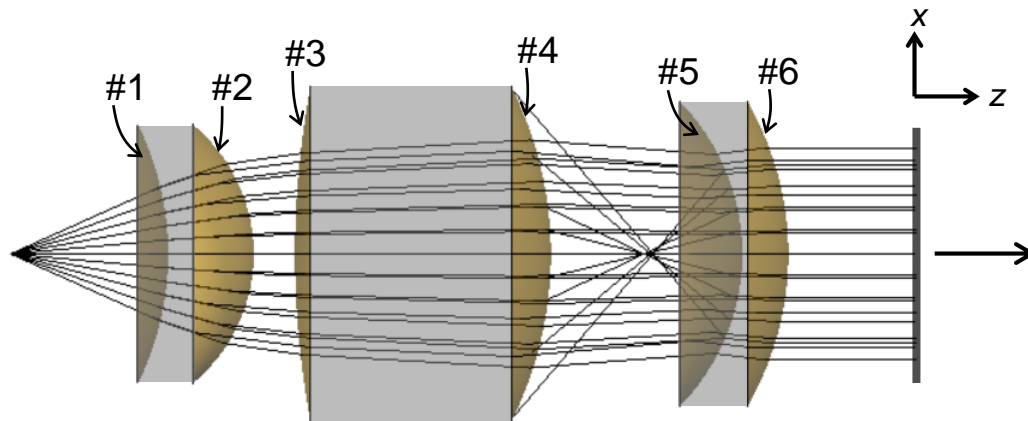


# Results

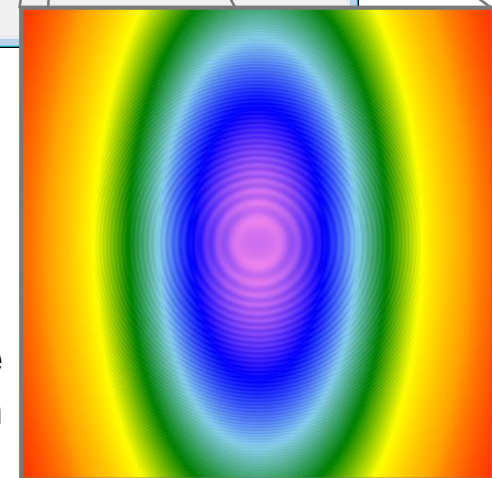
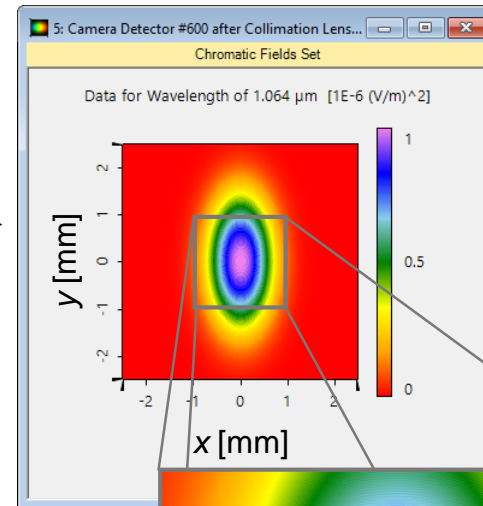


Ray-tracing analysis provides a fast overview of the complete system in space, including non-sequential interactions.

# Results

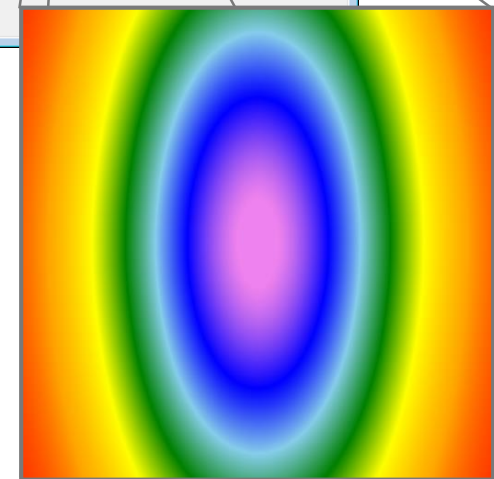
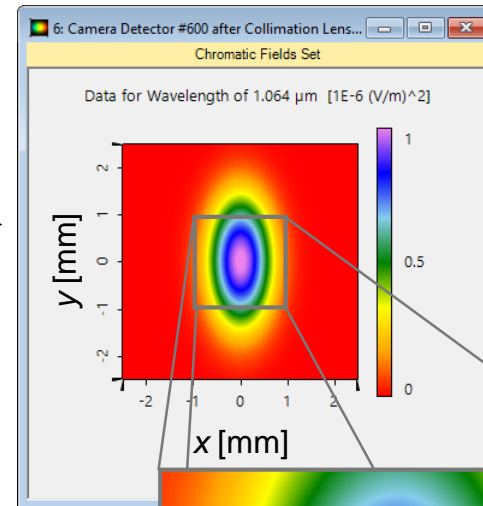
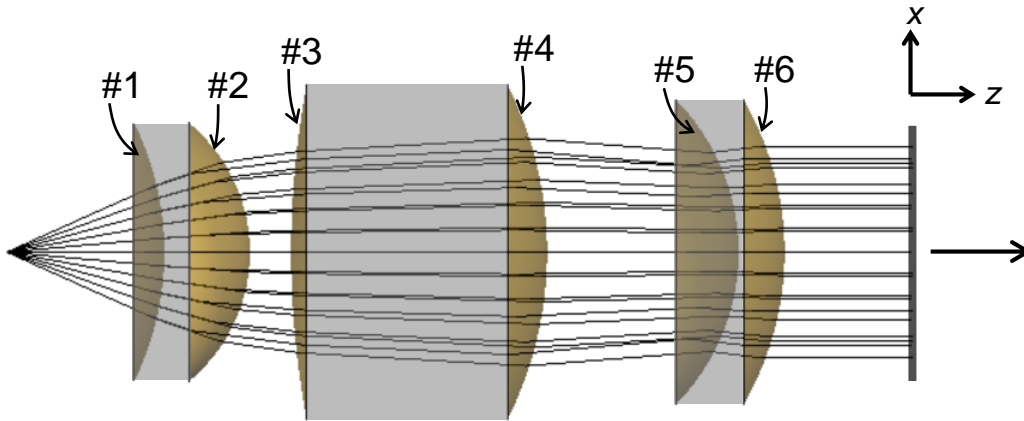


	#1	#2	#3	#4	#5	#6
+/+	√	√	√	√	√	√
+/-					√	
-/-						
-/+				√		



Simulation including interference caused by multiple reflections between uncoated surfaces takes 8 seconds.

# Results



	#1	#2	#3	#4	#5	#6
+/+	✓	✓	✓	✓	✓	✓
+/-						
-/-						
-/+						

Perfect AR coating is assumed and can be realized by setting up the surface channels for non-sequential tracing. Then, the interference pattern disappears.

# Document Information

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title	Investigation of Ghost Image Effects in Collimation System
version	1.0
VL version used for simulations	7.3.0.50 (Non-sequential Extension)
category	Technology Use Case

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