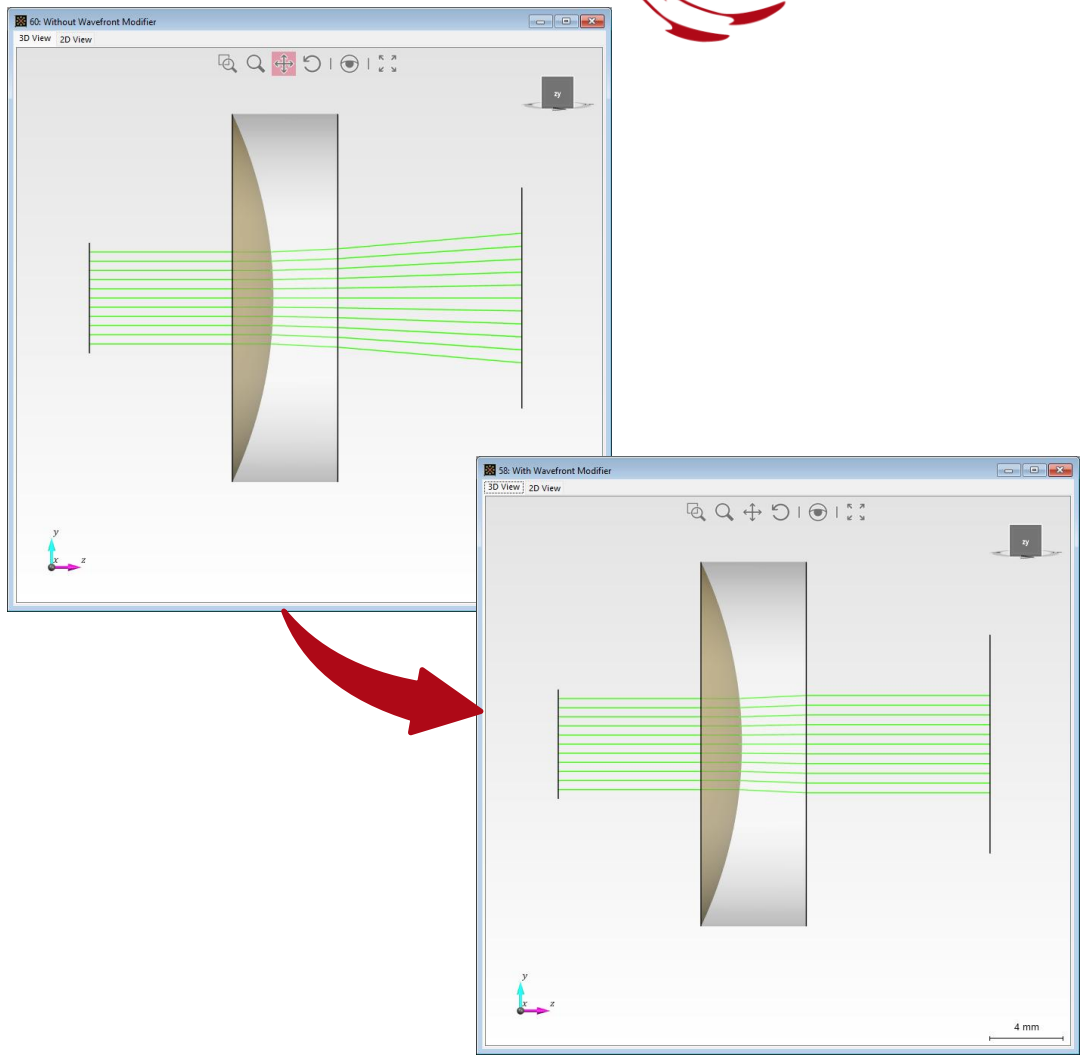
Wavefront Phase Modifier Twins

Wavefront Re-Collimation After a Plano-Concave Lens



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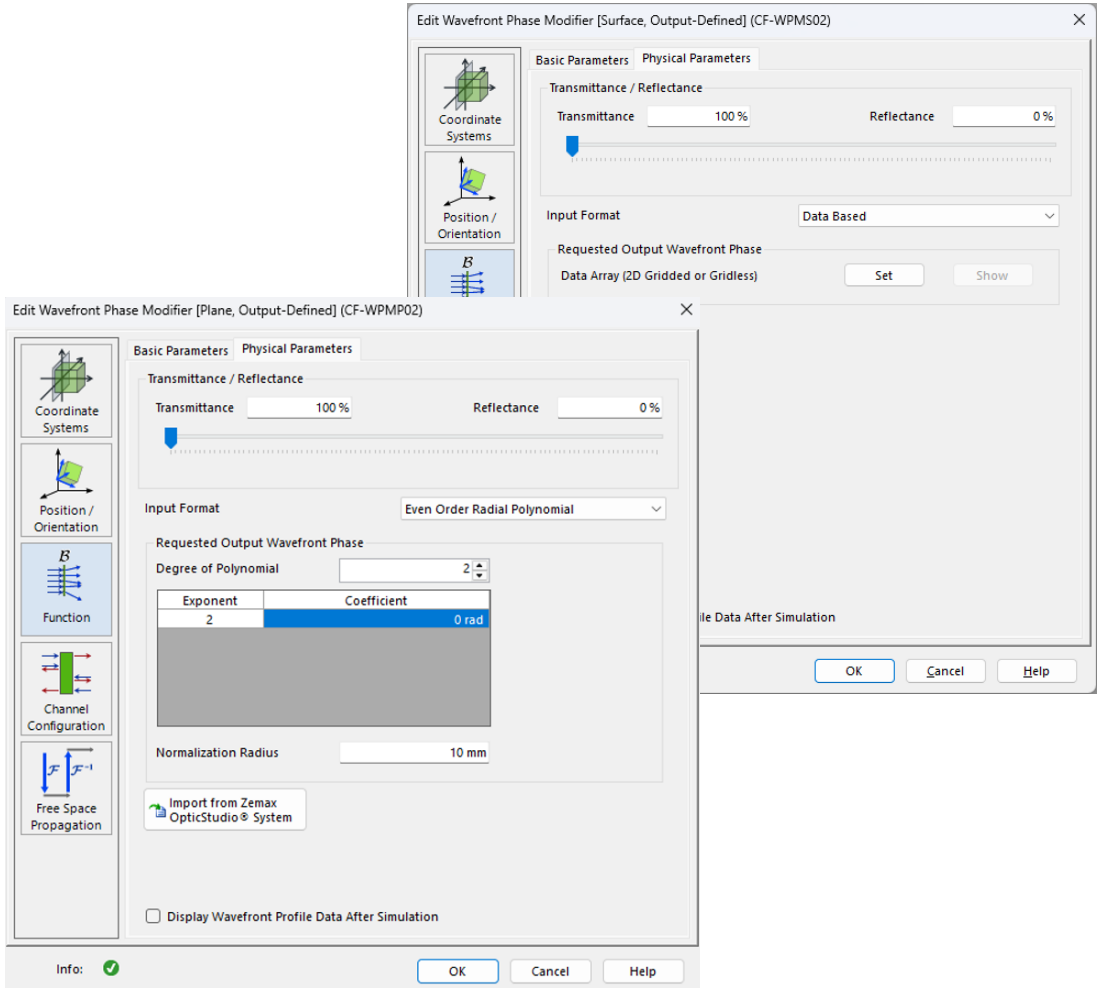
What Can Wavefront Phase Modifiers Be Used For?

Wavefront Phase Modifier Twins

- **CF-WPMP01: Wavefront Phase Modifier [Plane, Profile-Defined]** — Applies a prescribed phase profile on a plane.
- **CF-WPMP02: Wavefront Phase Modifier [Plane, Output-Defined]** — Derives the phase correction on a plane from the desired output.
- **CF-WPMS01: Wavefront Phase Modifier [Surface, Profile-Defined]** — Applies a prescribed phase profile on a surface.
- **CF-WPMS02: Wavefront Phase Modifier [Surface, Output-Defined]** — Derives the phase correction on a surface from the desired output.



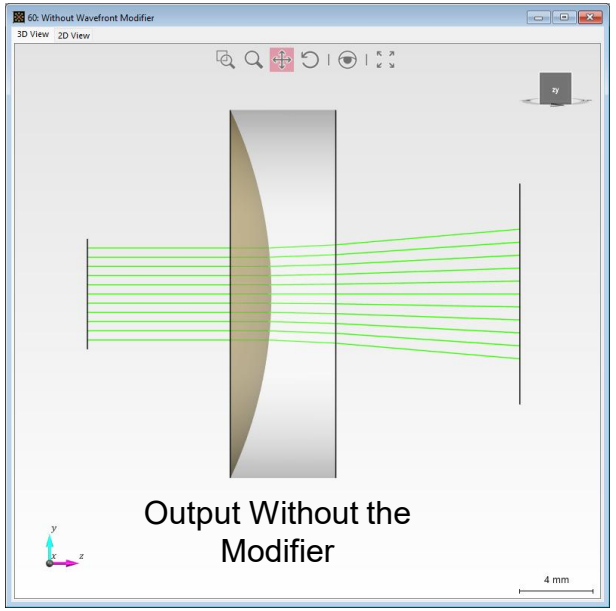
Configuring a Wavefront Phase Modifier Twin

** Find the specification sheets in the Documentation Ecosystem using the twin codes.*

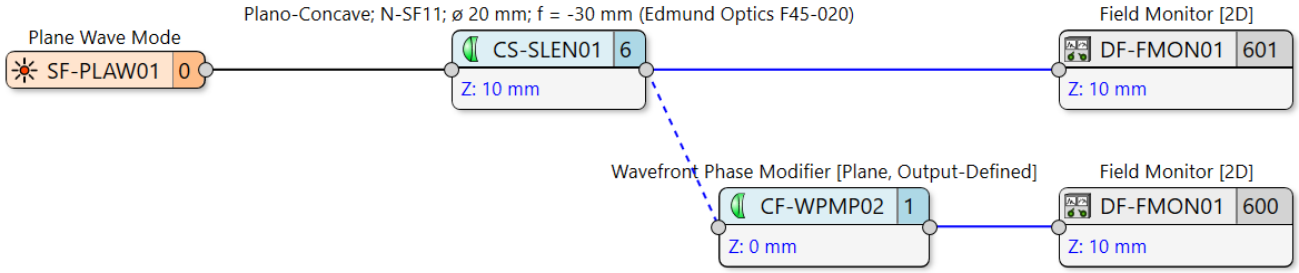
Demo : Wavefront Phase Modifier [Plane, Output-Defined]

Re-Collimating the Output of a Fixed Lens

- A plane wave passes through a fixed plano-concave lens and becomes divergent.
- A plane wavefront is specified as the target output.
- The Wavefront Phase Modifier twin determines the required corrective phase $\Delta\psi$ to re-collimate the beam.



Output Without the Modifier

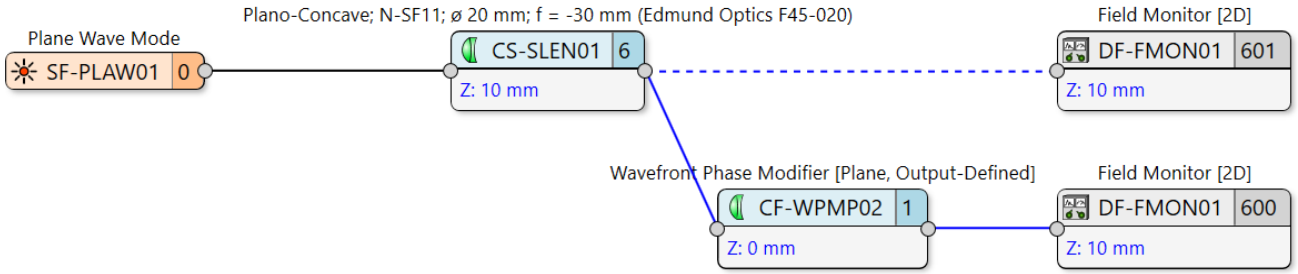


Optical Setup Without the Modifier

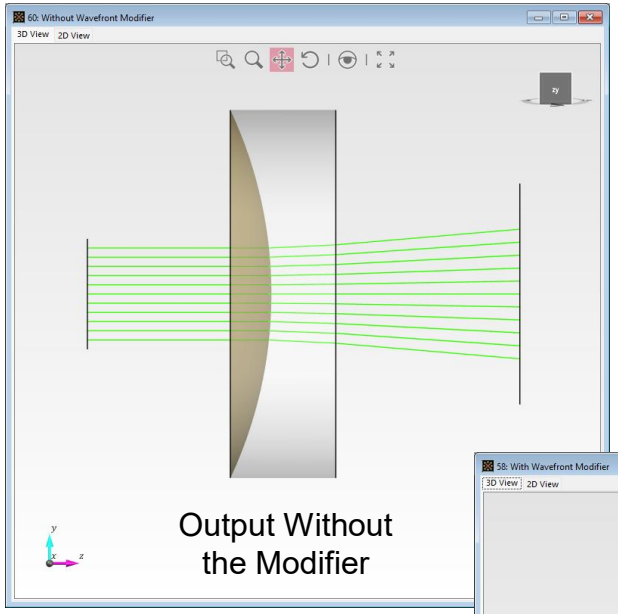
Results

Main Observation

- Without the modifier, the output beam is divergent and its wavefront phase is no longer planar.
- With correction, the beam is re-collimated and has a planar wavefront phase.
- The extracted $\Delta\psi$ describes the required phase correction. It can then be implemented as an HOE or metasurface on a planar surface.

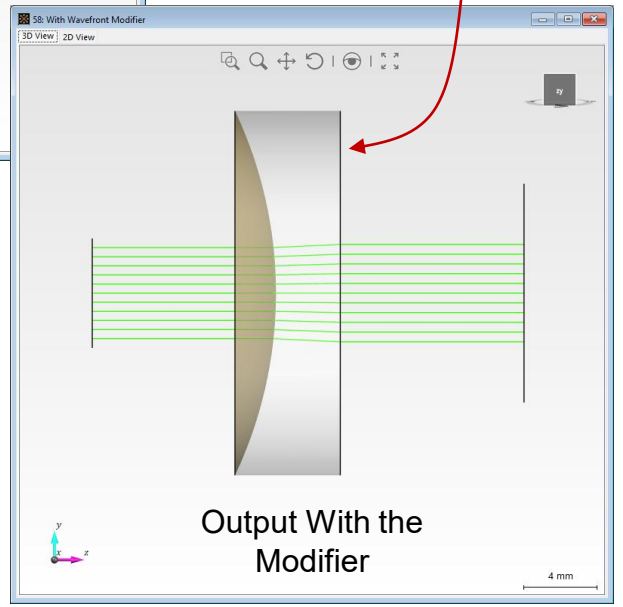


Optical Setup With the Modifier



Output Without the Modifier

Wavefront Phase Modifier

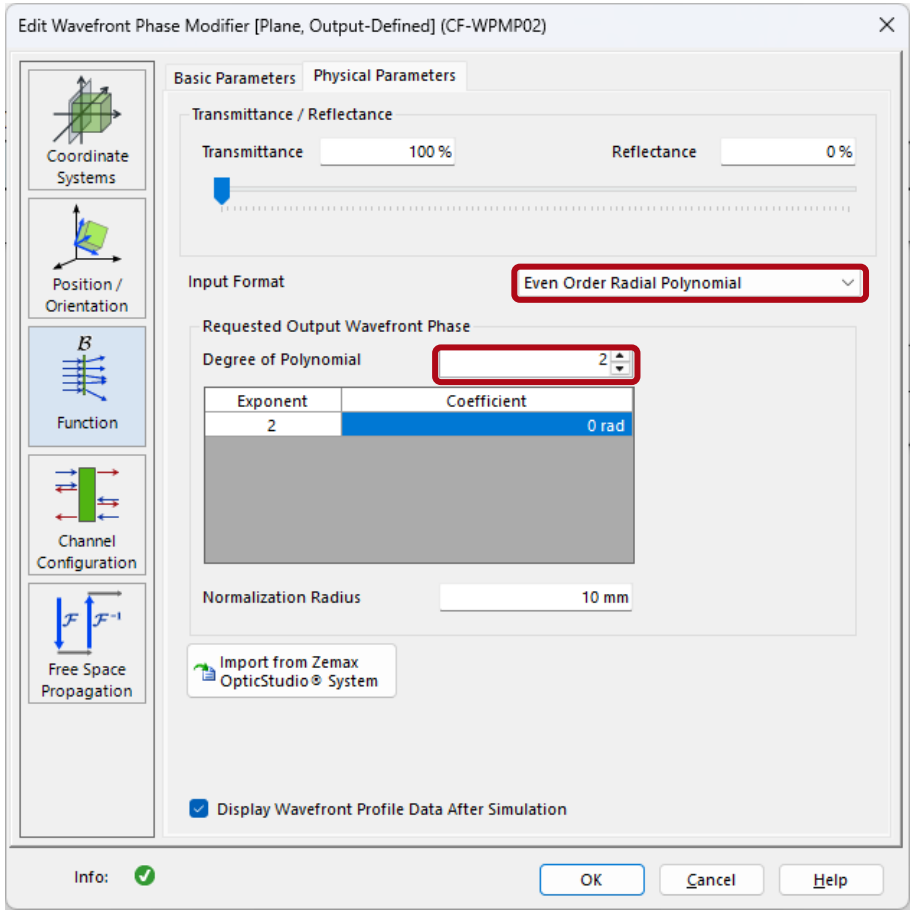


Output With the Modifier

Workflow

What the User Does

1. Open the lens system and run it without the Wavefront Phase Modifier twin.
2. Inspect the divergent output without the modifier.
3. Open the system containing the Wavefront Phase Modifier [Plane, Output-Defined] twin.
4. Select Even Order Radial Polynomial and set all coefficients to zero to define a plane target wavefront.
5. Run the simulation and inspect the re-collimated beam and extracted $\Delta\psi$.



Related Documents

Use Cases and Feature Demos

- Collimation with a Metalens Based on Nanopillars
- Aberration Control via Metalens
- Wavefront Modifier Twins (Aberration Correction)
- Transfer Wavefront Phase Profile to a Metalens

Tutorials

- Wavefront Phase Modifiers

→ Suggested Next Steps

- Apply Wavefront Phase Modifier twins on curved surfaces.
- Use a Wavefront Phase Modifier twin to compensate aberrations in an existing optical system.