



LENS POSITION OPTIMIZATION

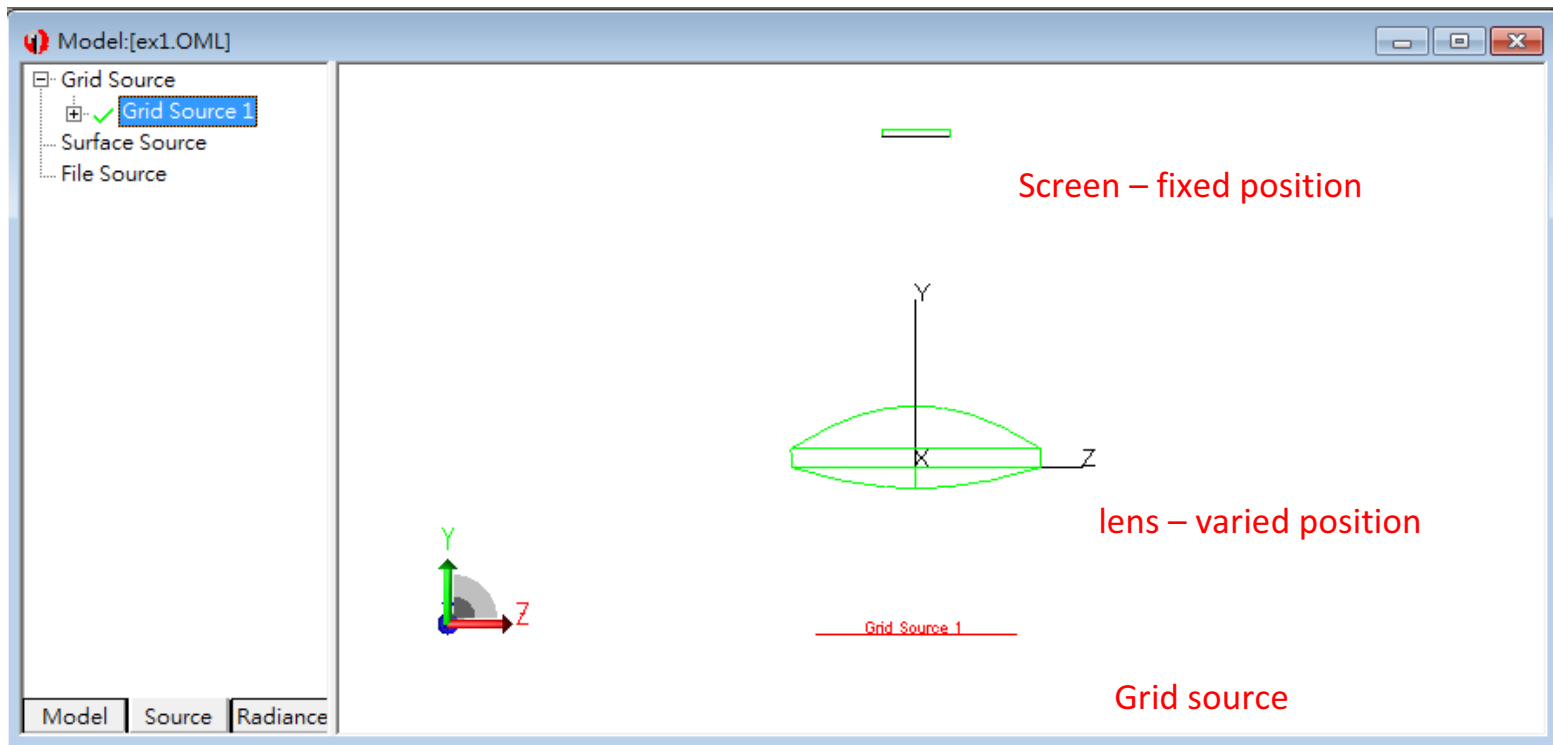
Trace**Pro**



Lens position optimization

Model in TracePro (ex1.oml)

TracePro

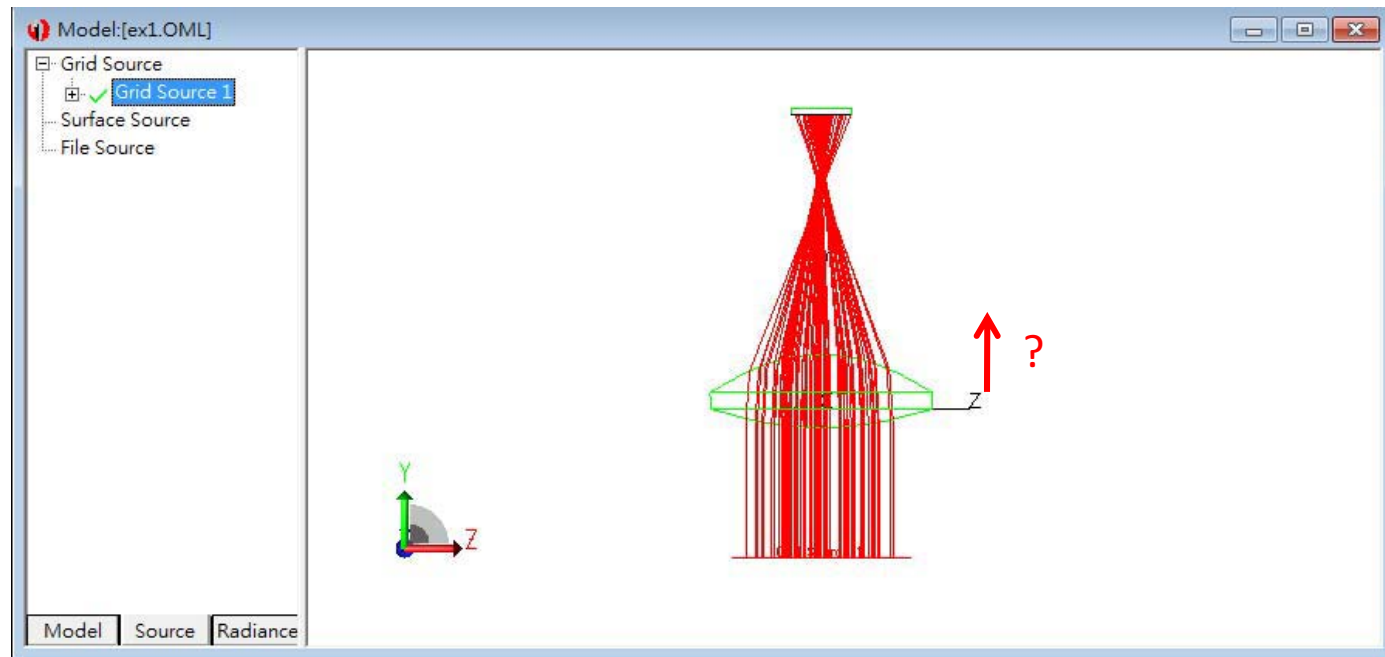




Lens position optimization

Target

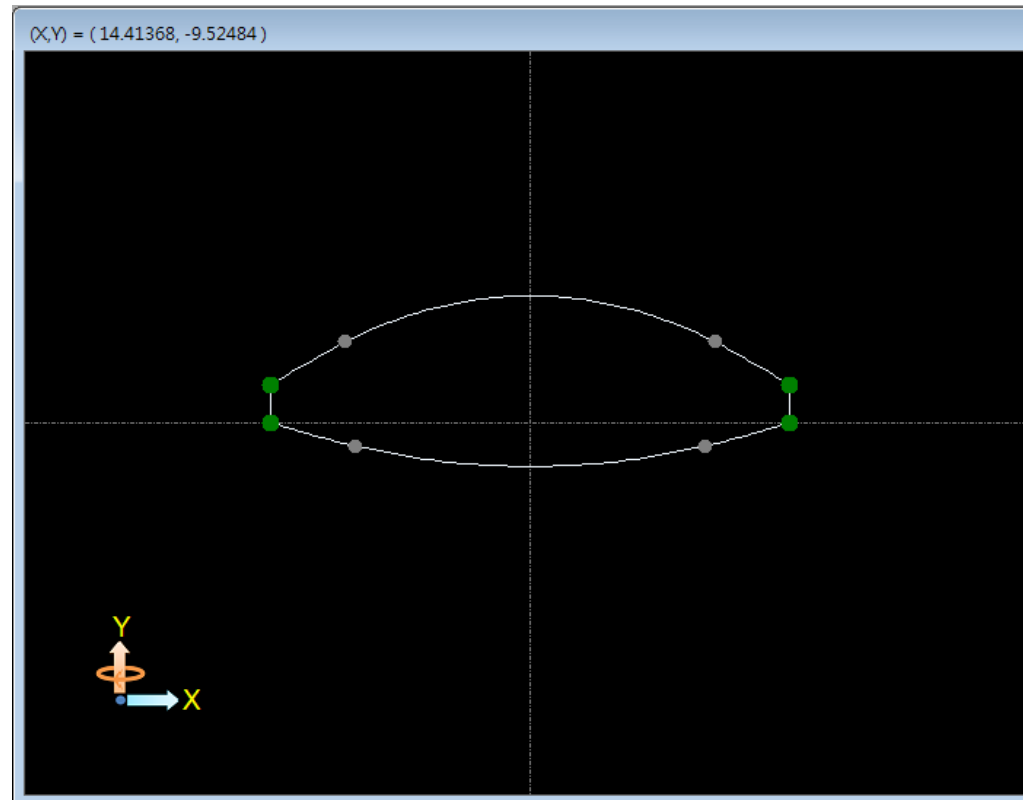
- find the best position of lens having the smallest spot size





Lens position optimization

We start by creating a simple lens with positive optical power in the lens profile editor in the Interactive Optimizer



TracePro



Lens position optimization

Define necessary parameters in the Optimization window

Optimization

Save path: D:\Demos\LightingOptimizer\exLensPosition\Results

File prefix: ex1

Variables

Object	ID	Type	Value	Lo limit/Pickup value	Hi limit

Operands

Type	Opt.	Wgt.	Surface

Objects

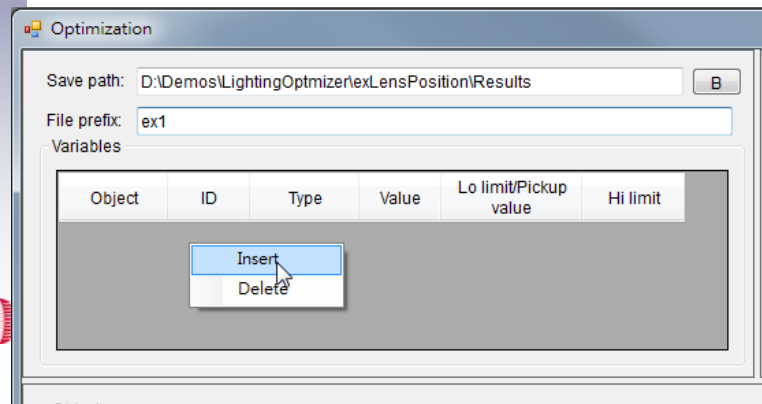
Output?	Object ID	Name	Mat. Catalog	Mat. Property	Geo. type	Linked Obj/Length	After-scheme
		Pre-processor					
<input checked="" type="checkbox"/>	0	lens	None		RadialSym...		

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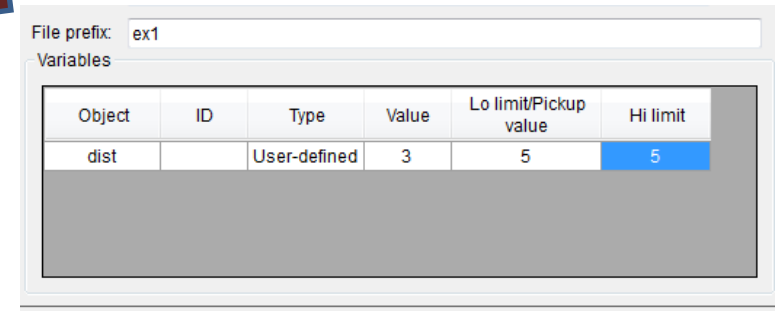
Lens position optimization

Build a new user-defined variable named as “dist” for controlling the shift distance of lens



Right-click in the variable view and click on the “Insert” to add a new user-defined variable

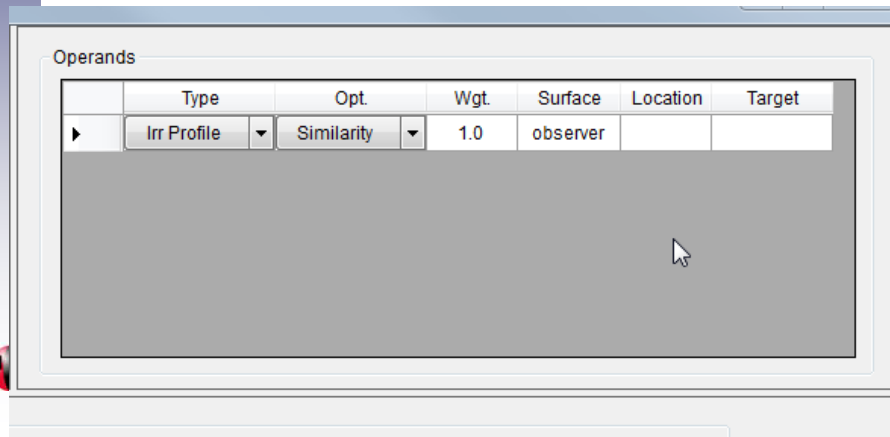
The given name of the newly inserted user-defined variable is “dist” (first column). The initial value is 3 (the fourth column). And the lower limit and upper limits are 5, which means the changing range of variable “dist” is from -2 to 8.





Lens position optimization

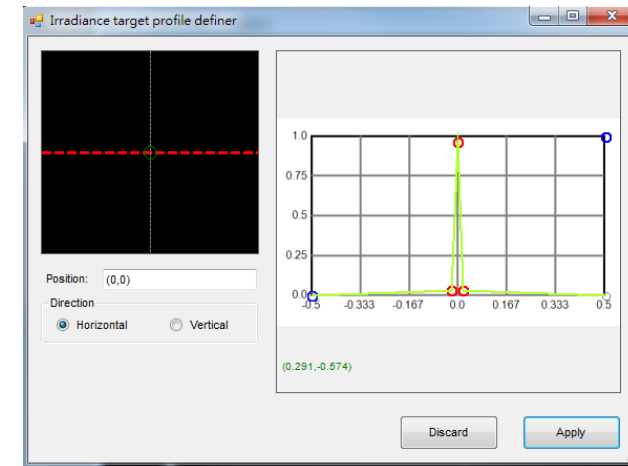
Setting the irradiance profile as the target operand.



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Set the surface name as "observer" which is consistent with the image plane defined in the TracePro model

To have the smallest spot size, we have to set the target as a delta peak.





Lens position optimization

Assigning the object information including after-scheme as follows:

Objects						
Output?	Object ID	Name	Mat. Catalog	Mat. Property	Geo. type	Linked Obj/Length
		Pre-processor				
<input checked="" type="checkbox"/>	0	lens	Plastic	pmma	RadialSym...	

TracePro

Change the name of object#0 to "lens", and choose its material as Plastic-pmma.



Double click on the corresponding after-scheme cell to launch the scheme editor.



Lens position optimization

Type “`move(0, vector(0,1,0), var("dist"))`” in the scheme editor.

```
move(0, vector(0,1,0), var("dist"))
```

The command “move” is to shift the object#0 (first argument - 0) along y axis (second argument - vector(0,1,0)) by the value retrieved from the user-defined variable “dist” (third argument – var(“dist”).

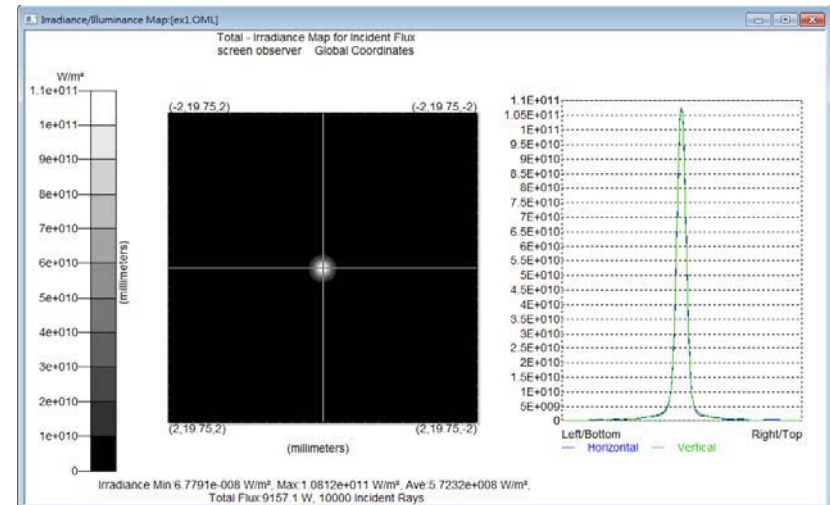
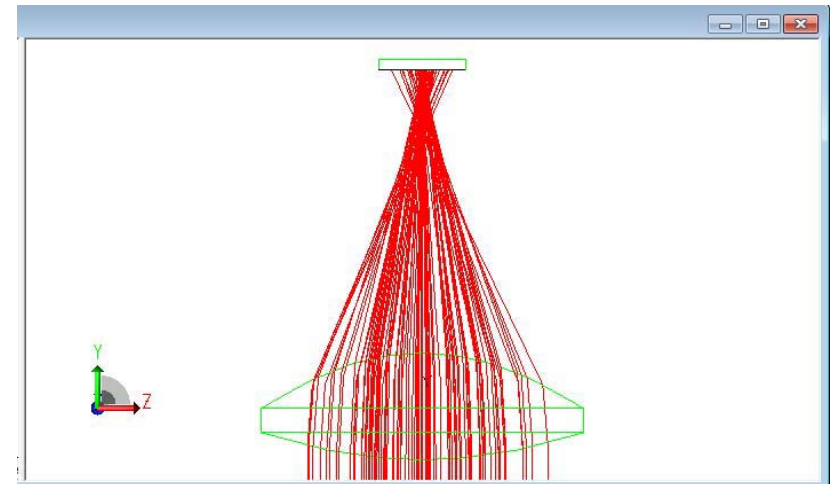
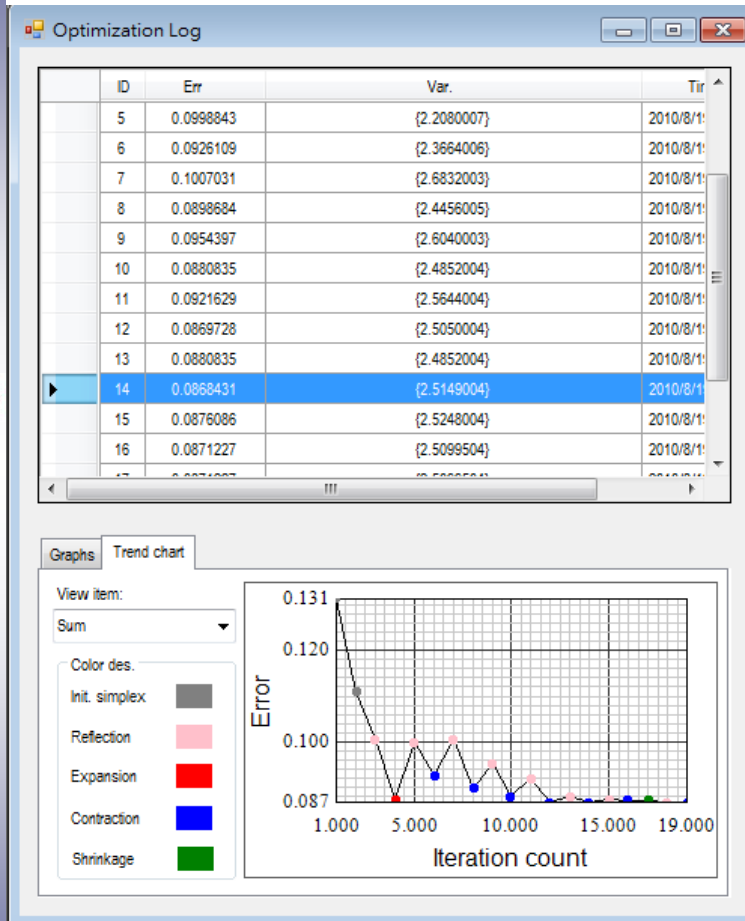
Note: please refer to the Commands of the Interactive Optimizer for more details about available commands.



Lens position optimization

Optimization results as follows.

TracePro





Lens position optimization

Here we demonstrates how to use the new built-in commands to simply manipulate the model in TracePro without any Scheme language knowledge.

TracePro

The added capability of using user-defined variables can widely extend the applications that the Interactive Optimizer can handle.