



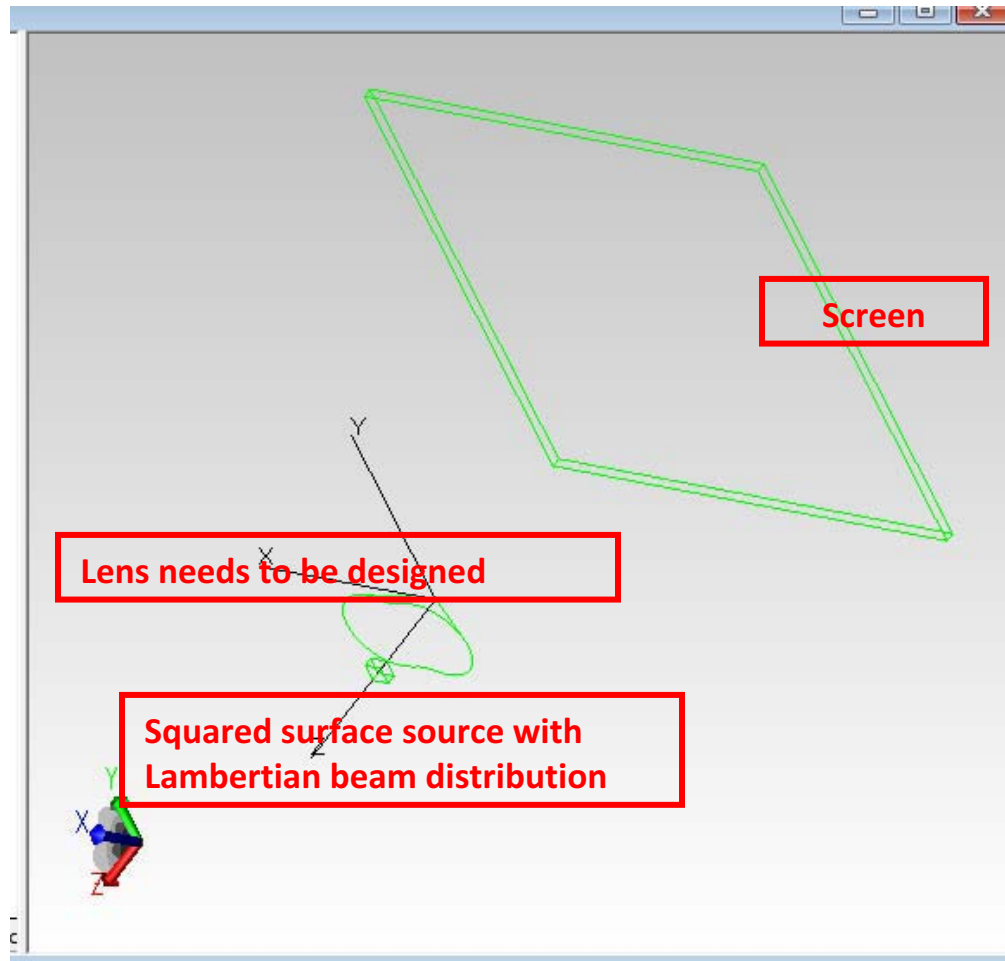
Trace**Pro**

# Biconic Lens Optimization



# Biconic lens optimization

**Model in TracePro (ex4.oml)**



TracePro

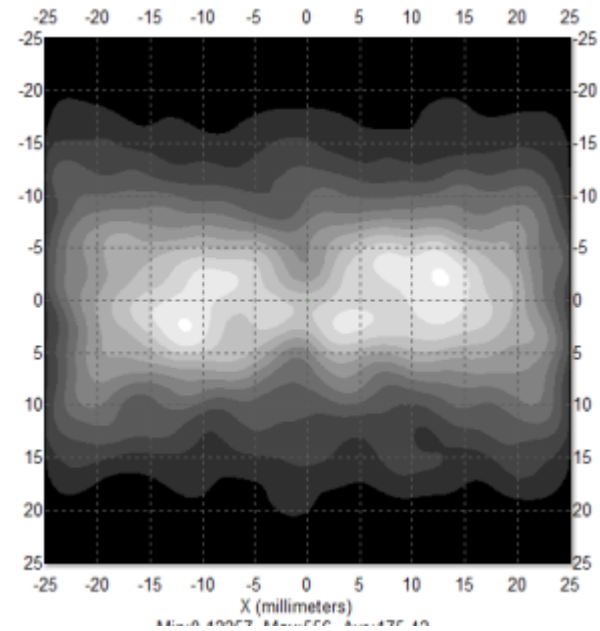
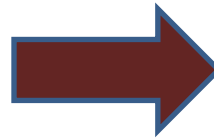
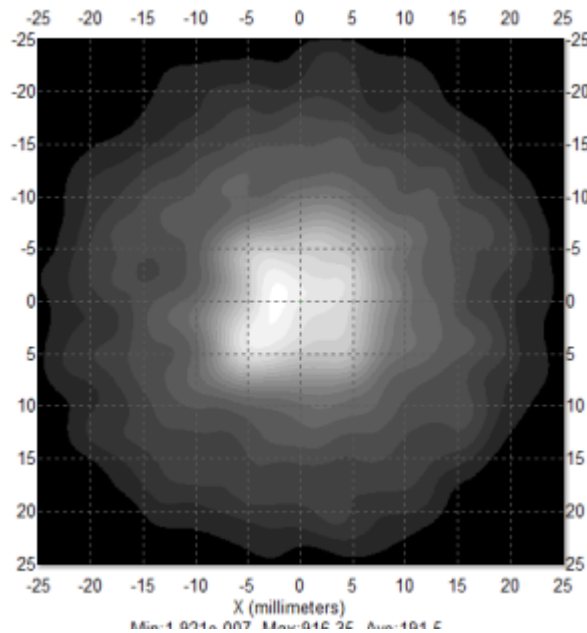


# Biconic lens optimization

## Target

Reshape the irradiance map from circular to rectangular

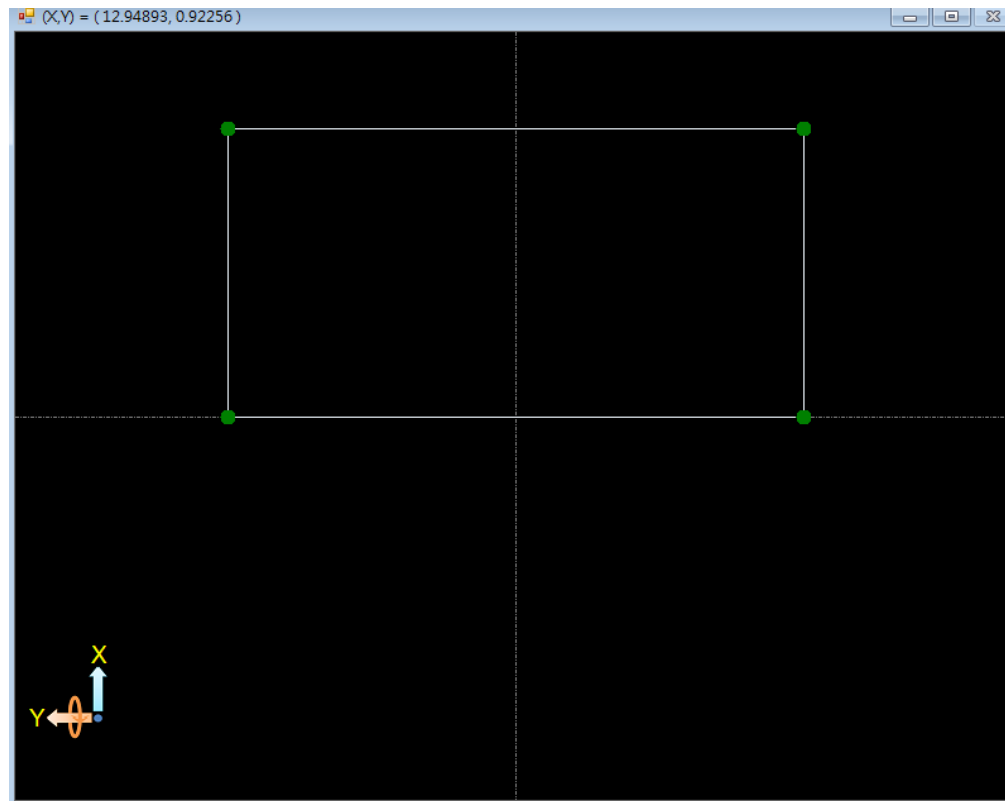
TracePro





# Biconic lens optimization

Start a new design in the Interactive Optimizer. No need to make any change to the initial object, since in this example, the lens will be made by after-scheme, not from the drawing window.

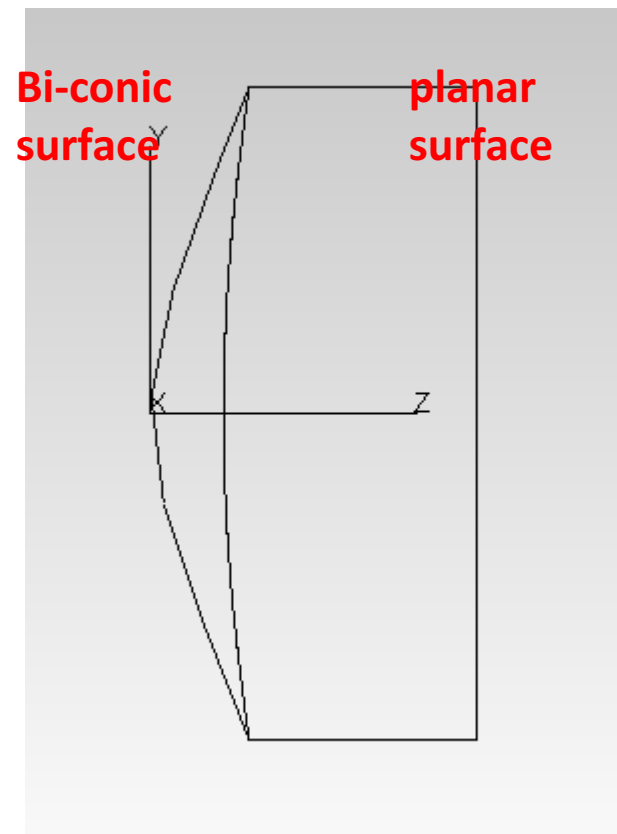


TracePro



# Biconic lens optimization

Our plan is to design a biconic-planar lens to reshape the irradiance.



TracePro



# Biconic lens optimization

Add four user-defined variables as shown in the screen shot below.  $r_x$  and  $r_y$  are the curvatures along x- and y- axis, respectively and  $c_x$  and  $c_y$  are the Conic constants respectively.

## Variables

Object / Var name	ID	Type	Value	Low limit	Hi limit
$r_x$		User-defined	10.5	8	20
$r_y$		User-defined	10.5	8	20
$c_x$		User-defined	-2	2	2
$c_y$		User-defined	-2	2	2



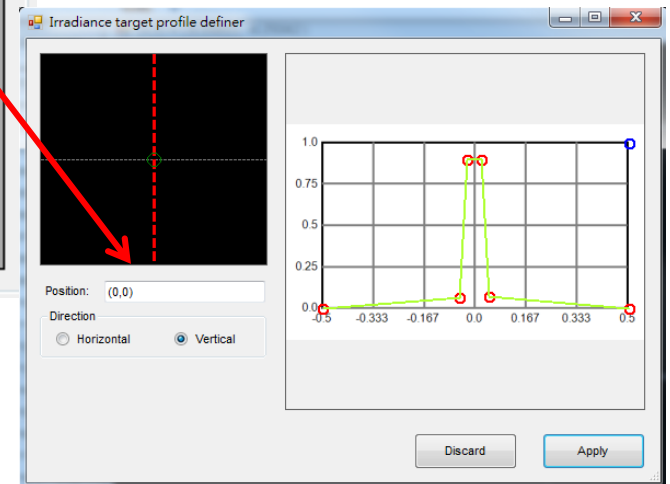
# Biconic lens optimization

Two targets were set to stretch the irradiance map to a wider output in the x direction and narrower in y direction.

Trace

Operands

	Type	Opt.	Wgt.	Surface	Location	Target
▶	Irr Profile	Similarity	1.0	target		{0:0:H:(-0.5...
	Irr Profile	Similarity	1.0	target		{0:0:V:(-0.5...





# Biconic lens optimization

Now, uncheck all objects, but remember to input the after-scheme info in the first row.

Objects

Output?	Object ID	Name	Mat. Catalog	Mat. Property	Geo. type	Linked Obj / Length	After-scheme
		Pre-processor					surf1=face:biconic(var("rx"),var...
<input type="checkbox"/>	0	Object 0			RadialSym...		

Scheme editor

```
surf1=face:biconic(var("rx"),var("ry"),var("cx"),var("cy"))  
surf2=face:planar()  
makelens("lens",surf1,surf2,5,10)  
appliesmaterial("lens","Plastic","pmma")
```

TraceP

The explanations for all commands can be found in the command reference document.

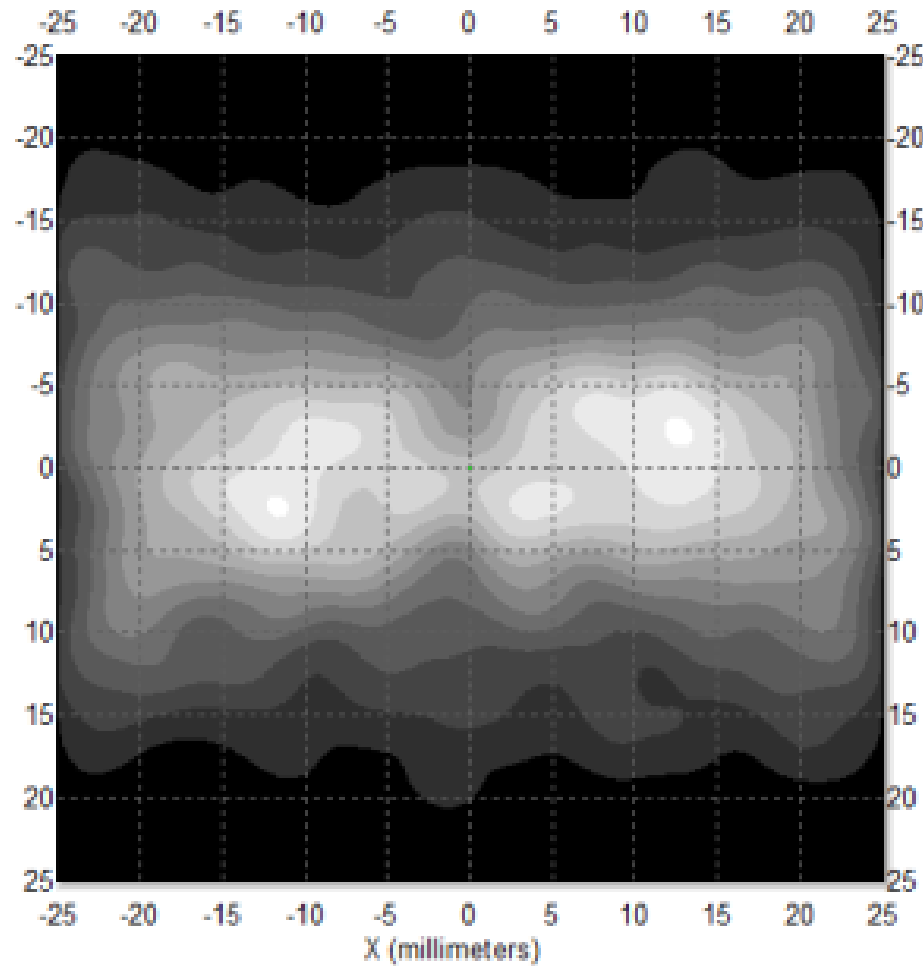
Discard Apply





# Biconic lens optimization

## Final result



TracePro