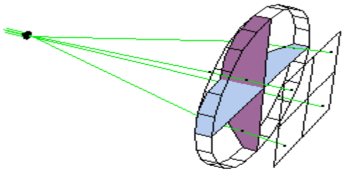
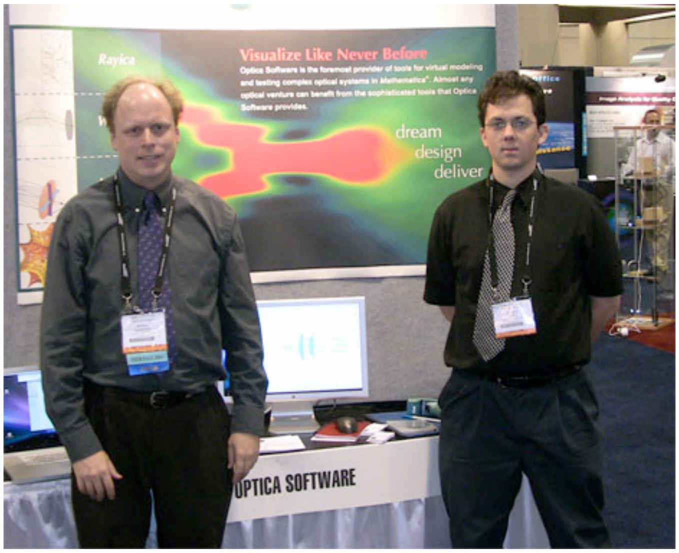
Optica Software ™

Issue No. 20 Sept 2008

ADDRESSING THE OPTICAL DESIGN AND ANALYSIS NEEDS OF CORPORATE, BUSINESS, EDUCATIONAL, GOVERNMENTAL AND INDIVIDUAL USERS.



Optica News


Rayica
Visualize Like Never Before
Optica Software is the foremost provider of tools for virtual modeling and testing complex optical systems in Mathematica®. Almost any optical venture can benefit from the sophisticated tools that Optica Software provides.
dream
design
deliver
OPTICA SOFTWARE

We will be giving a presentation at the Wolfram Research International Mathematica User Conference 2008, Oct 23-25 in Champaign, Illinois. Let us know if you are going to this conference and also if you are interested in Optica3 training. For more details see http://www.wolfram.com/news/events/userconf2008/

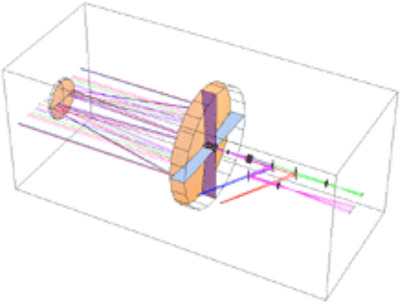
Jon McLoone, from Wolfram Research, will show Mathematica demonstrations, including Optica3 examples, on 26 September at the Fraunhofer Institute for Laser Technology. For more details see:
http://www.wolfram.com/services/seminars/fraunhofer2008/index.html

This past August the **Optica Software** team traveled to San Diego and attended the SPIE Optics + Photonics Exhibition. Optica Software founder, Donald Barnhart, and recent our addition to the **Optica Software** team, Andrew Wesly, presented our software packages at the booth and demonstration talk. They were delighted to meet the users that stopped by and had a great time at the show! In case you missed us at our booth, here are a few highlights:

-We demonstrated real-time dynamic modeling
-Exhibited real-time freeform optical surface manipulation
-Explored fully customizable routines with our distributed source code
-Showed Gaussian beam propagation calculations
-Presented standalone models to enhance idea communication
-Explained inherent three-dimensional ray-trace calculations
-All ray-traces take into account physical beam properties
-How *Optica* can help your company dream, design and deliver results.

Notes from the Developer

Donald Barnhart, Ph.D. – Optica Software Lead Developer
donald@opticasoftware.com



Q/A:
Note for Windows Vista Users:

You will need to update your version of Java in order for the GUI to run. Instructions
Are given at: http://www.opticasoftware.com/support/GUIVista.pdf

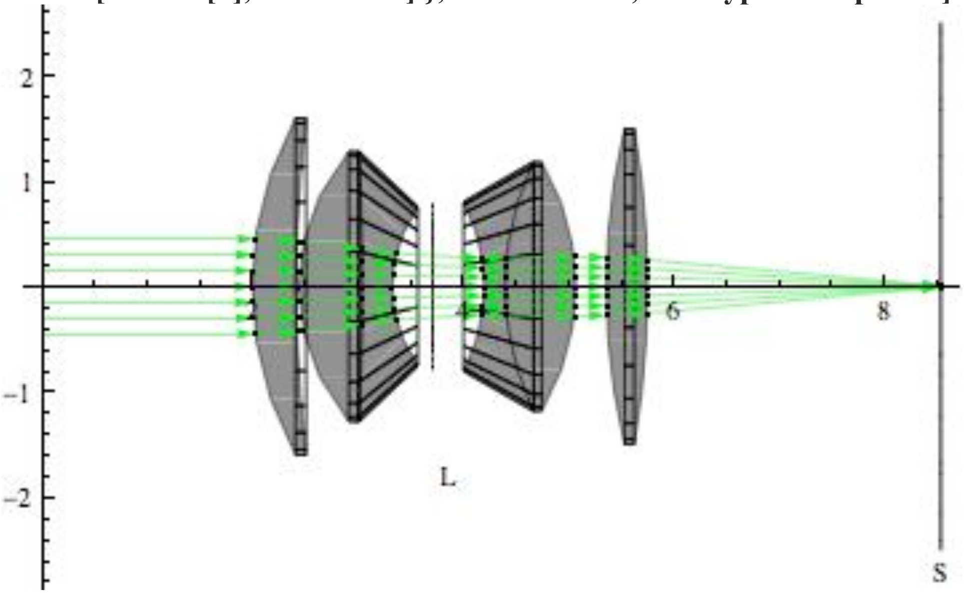
How can a simple multi-surface lens be represented?

There are several ways to do this, but The CompoundLens component may be the easiest function to use for this purpose. Many lens designs from standard textbooks can be represented using it. Also, CodeV and Zemaz designed lenses usually translate well into a CompoundLens. Here is an example of a Double Gauss Lens taken from Milton Laikin's *Lens Design* p67.

CompoundLens[curvatures, surfaceboundaries, surfaceseparations, opticalmediumlist, label, options] refers to a lens assembly that consists of spherical and aspherical refracting surfaces.

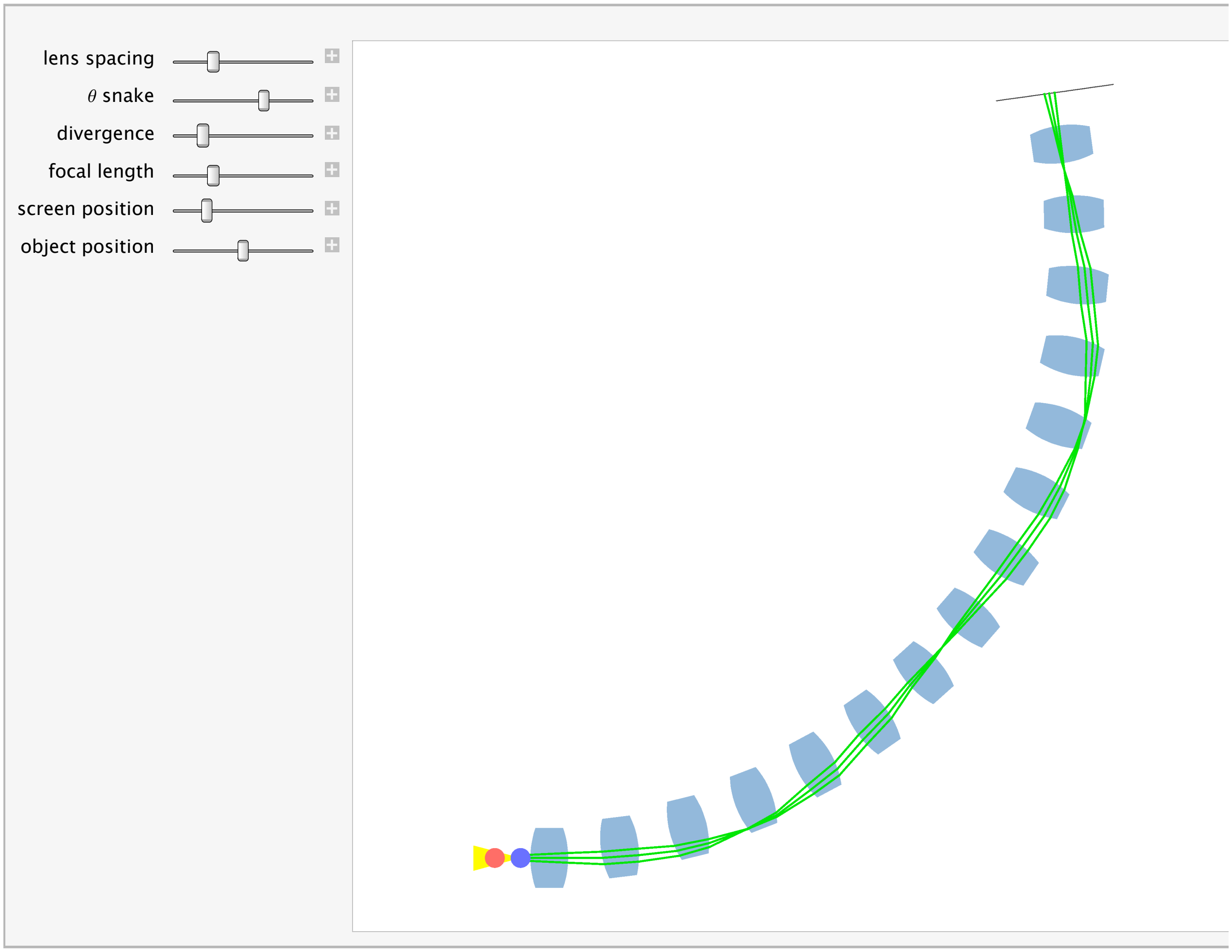
```
  mycompoundlens1 =  CompoundLens[{3.3077, 13.8223, 1.9625, -22.1426, 1.2787, , -1.7291,
  2.7243, -2.2955, 6.5730, -8.8951},
 {3.20, 3.20, 2.56, 2.56, 1.50, 1.26, 1.60, 2.36, 2.36, 3.0, 3.0},
 {.420, .023, .605, .283, .380, .491, .201, .672, .286, .394},
 {SK16, IntrinsicMedium, SK16, LF5, IntrinsicMedium, IntrinsicMedium,
  LF5, SK4, IntrinsicMedium, SK16}]
```

```
DrawSystem[{ LineOfRays[.9, NumberOfRays -> 7], Move[mycompoundlens1, 2],
  Move[ Screen[5], 6.538 + 2.0] }, Axes -> True, PlotType -> TopView]
```



LENS SNAKE

This Demonstration, affectionately dubbed Lens Snake shows how the ref of lenses can be combined to make a "flexible" optical imaging system. With the Lens Snake, one can view images from around corners! The code found at: http://www.opticasoftware.com/support/optica3.html


lens spacing
θ snake
divergence
focal length
screen position
object position