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## Sun Source (contributed by Ben Jacobson, Illumitech, [www.illumitech.com](http://www.illumitech.com) )

```
Needs["Rayica`Rayica`"]
```

```
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```

```
Rayica 3.0 was loaded in 5 s and needs  
10196 kilobytes of memory on top of 7247 kilobytes already used
```

```
$HistoryLength = 5;
```

### ■ Light sources

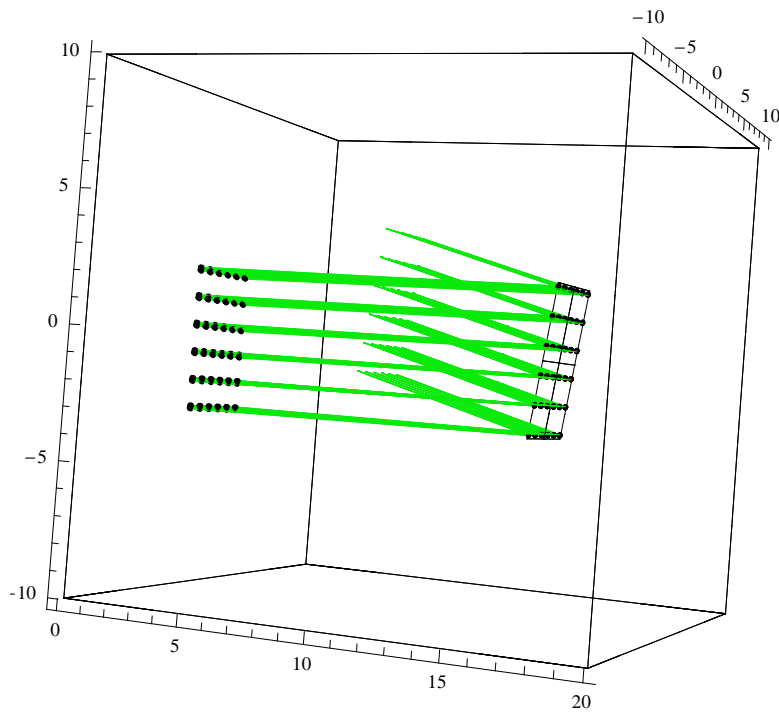
( It is noted that to improve this model, users can set the grid at the surface of the mirror, and have rays coming in to each point on the grid with a Monte Carlo angular distribution)

```
In[14]:= LambertianDisk[diam_, halfangle_, nrays_, opts___] :=  
  Block[{posntable, tilttable}, posntable = Table[  
  
    Block[{r =  $\sqrt{\text{RandomReal}[\{0, \left(\frac{\text{diam}}{2}\right)^2]}$ },  $\theta = \text{RandomReal}[\{0, 2\pi\}]$ }, {0, r Cos[ $\theta$ ], r Sin[ $\theta$ ]},  
  
    {nrays}]; tilttable = Table[Block[{ $\phi = \text{ArcSin}[\sqrt{\text{RandomReal}[\{0, \text{Sin}[\text{halfangle}]^2\}]}$ },  
     $\theta = \text{RandomReal}[\{0, 2\pi\}]$ }, Flatten[{Cos[ $\phi$ ], Sin[ $\phi$ ] {Cos[ $\theta$ ], Sin[ $\theta$ ]}}], {nrays}];  
  BundleOfRays[{{RayStart, posntable}, {RayTilt, tilttable}}, opts]
```

```
In[15]:= sunsource[xmirror_, startclearance_, centerang_, halfang_, nrays_] :=  
  Move[GridOfRays[Move[LambertianDisk[.0001, halfang, nrays],  
    -startclearance {Cos[centerang/2], 0, -Sin[centerang/2]},  
    {Cos[centerang/2], 0, -Sin[centerang/2]}, .95 {4, 6}, NumberOfRays -> 6],  
    {xmirror, 0, 0}, {Cos[centerang/2], 0, -Sin[centerang/2]}]
```

```
In[17]:= trackingmirror[elevnangle_, xposn_] :=  
  Move[Mirror[{4, 6}], {xposn, 0, 0}, {-Cos[elevnangle/2], 0, Sin[elevnangle/2]}]
```

```
In[21]:= TurboPlot[{sunsource[15, 7.5, 15 Degree, 0.25 Degree, 10],  
trackingmirror[15 Degree, 15], Boundary[20]}, Axes → True]
```



```
Out[21]= -traced system-
```