code V®

Introductory User's Guide

CODE V 9.7
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Menu

Search

- Click the Quick 2D Labeled icon on the toolbar:

It's the middle one that shows a lens and a pencil along with the letter Q (for quick) and the letter L (for labeled—float the mouse over it to see the tool-tip help to see the message "Quick 2D – Labeled"). Keep the resulting window open as you work (resize and move the window as desired). When you change something, click the Execute button in the upper left corner of the window to redraw the lens picture.
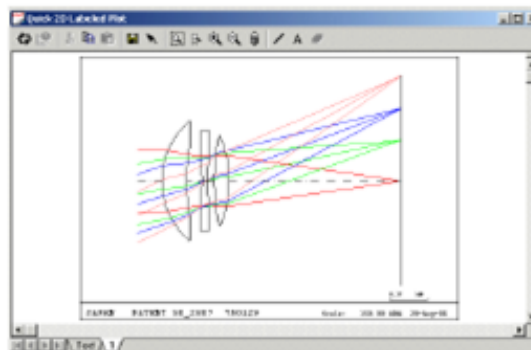
Before analyzing this lens, you will more than likely need to scale it to the required effective focal length (EFL).

Surface Operations: Scale the Lens

Although you set the f/number and field angles to the desired values in the New Lens Wizard, you need to be sure the lens has the specified effective focal length (EFL) of 6 mm. One way to determine this is to display a window of first order properties.

1. Choose the **Display > List Lens Data > First Order Data** menu, and re-size/re-position the resulting window for convenient viewing.

   Note the value labeled EFL in this window (0.9528 mm), which is not optimal for this application. Scaling the lens data is the usual way to fix this.

Menu

Search

Tip: You can place the EFL and various other lens properties on the status bar at the bottom of the main CODE V workspace. This allows continuous monitoring of these items. Choose the **Tools** > **Customize** menu and click on the **Status Bar** tab in the **Customize** dialog box to access this feature.

```
List First Order Data                    _ □ ✕

INFINITE CONJUGATES
    EFL         0.9528
    BFL         0.7743
    FFL        -0.8673
    FNO         3.5000
    IMG DIS      0.7702
    OAL         0.3000
    PARAXIAL IMAGE
    HT          0.4751
    ANG        26.5000
    ENTRANCE PUPIL
    DIA         0.2722
    THI         0.1949
    EXIT PUPIL
    DIA         0.2442
    THI        -0.0805
```

2. Select surfaces 1 to Image in the LDM spreadsheet window (click in the surface # column and drag to Image to select the range).

3. Choose the **Edit** > **Scale** menu to display a dialog box (note that the surface range is set to 1 to Image).

4. Click the button labeled **Scale Effective Focal Length**, then enter the value **6.0** in the field labeled **Scale Value**.

Menu

Search

5. Click **OK** to scale the lens.

6. Click the Execute button ⟳ in the **List First Order Data** window to update it.

   Note that the EFL value is now 6 mm as desired. Note also that the paraxial image height is 2.99 mm (close enough to the desired 3 mm).

7. Click the Execute button in the **Quick 2D Labeled Plot** window to update the picture as shown below.