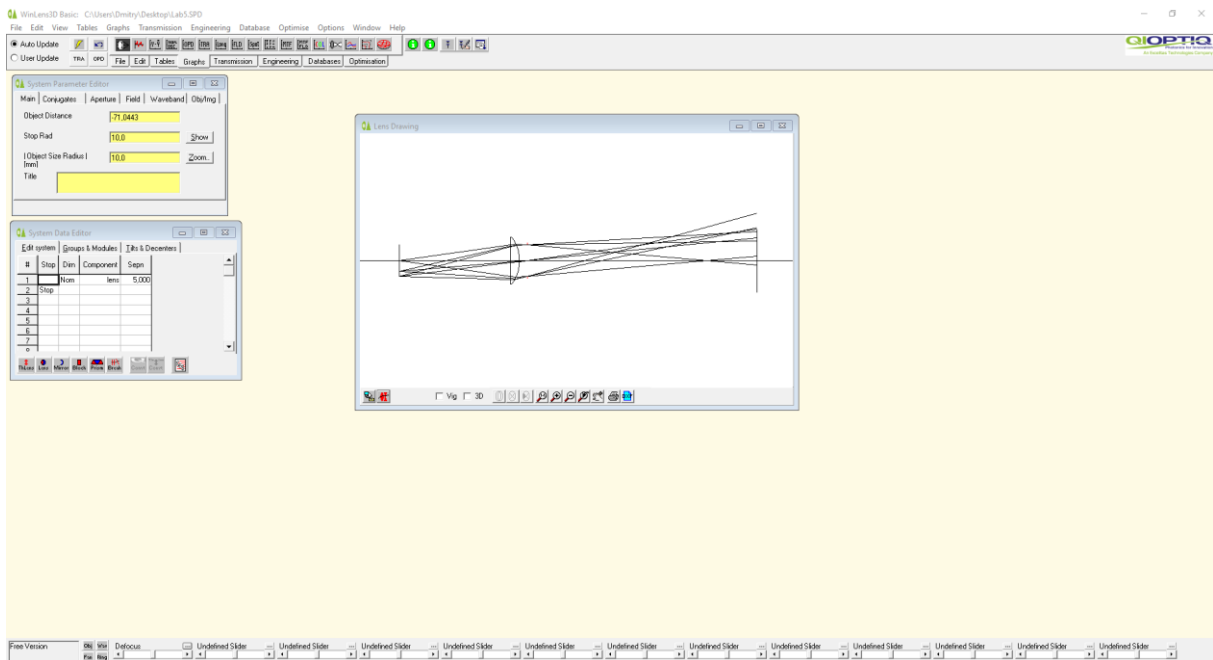
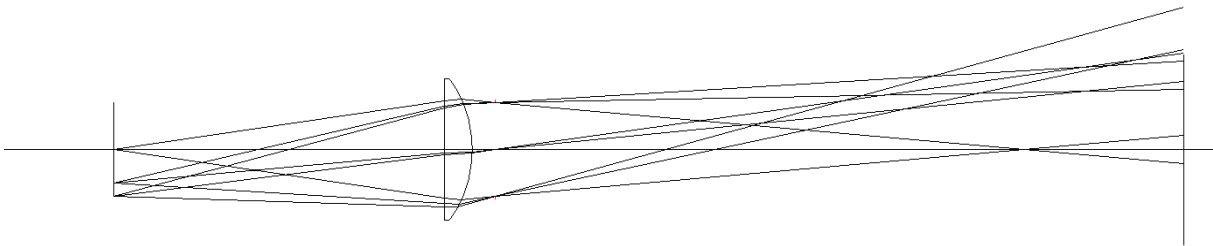


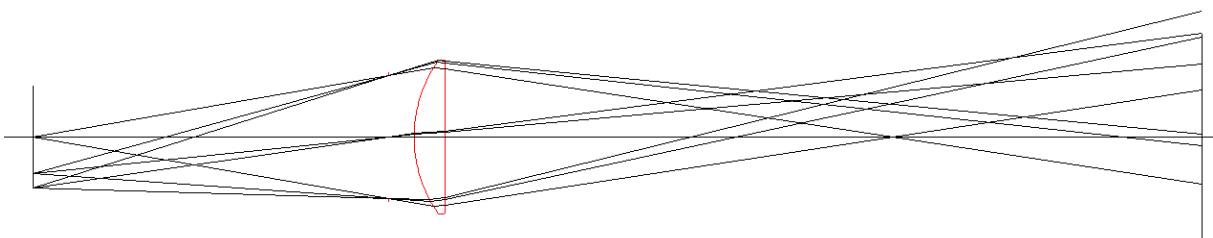
WinLens¹ short user guide for Lab 5



Lab5.SPD



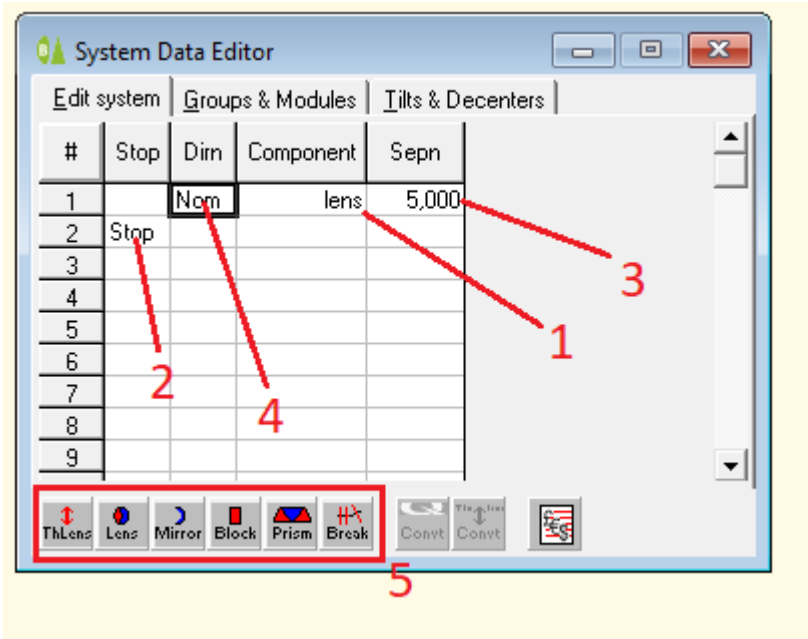
Lab5_1.SPD



¹ Free software, can be downloaded from the Qioptiq homepage ("Free software Winlens Basic")

1. Basic functions

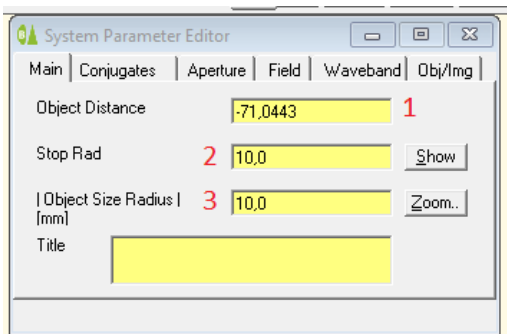
1.1. System data Editor



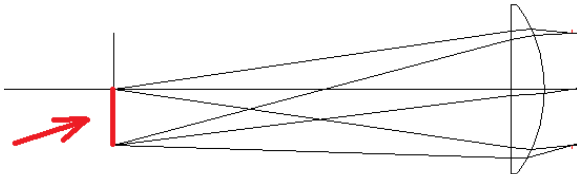
1. Lens
2. Aperture
3. Distance between the lens and the aperture (5mm)
4. Click to flip a lens
5. Drag-and-drop optical components

1.2. System Parameter Editor

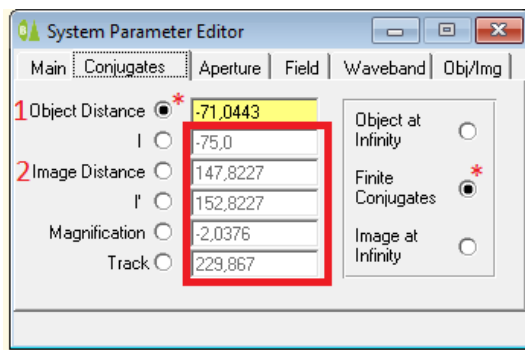
1.2.1. "Main"



1. Distance from the object to the first surface (lens or aperture). See 1.2.2 Conjugates on p. 4
2. Radius of the aperture (half of the diameter)
3. Distance from the optical axis to the object (object height)



1.2.2. "Conjugates"

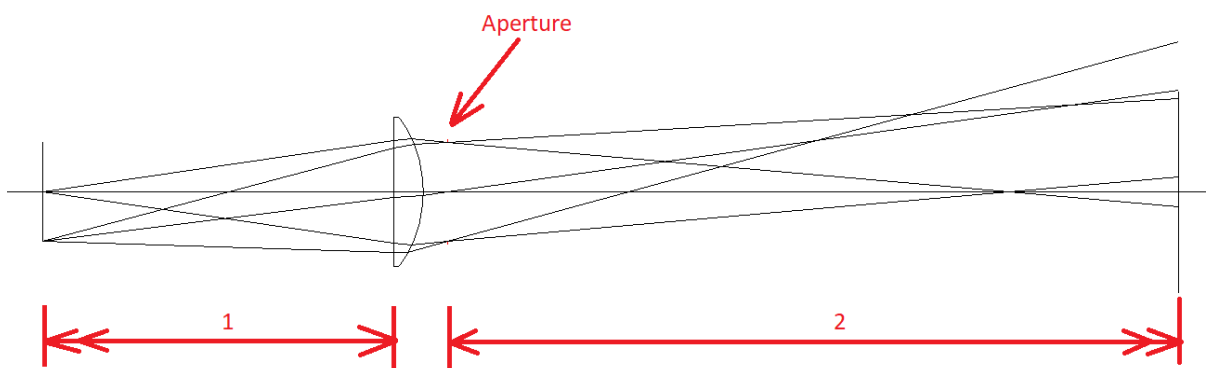


OBS! Positions marked with * have to be always checked

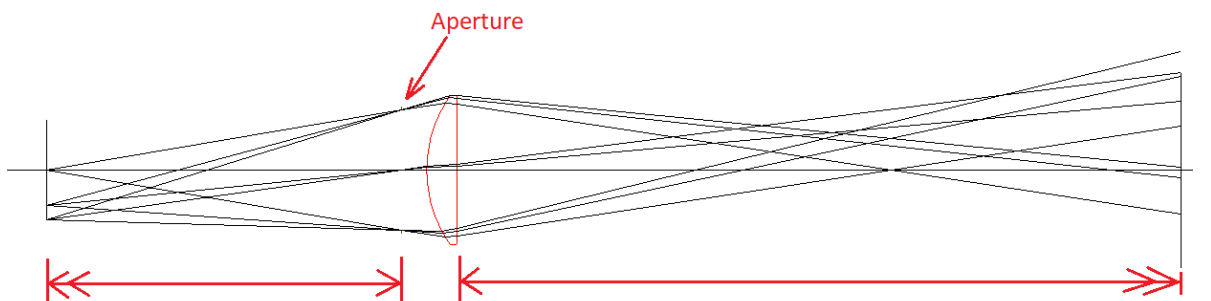
OBS! Values in the red box are calculated AUTOMATICALLY (can be used)

1. Distance from the object to the 1st surface of the optical system (lens or aperture);
2. Distance from the last surface of the optical system to the image (lens or aperture).

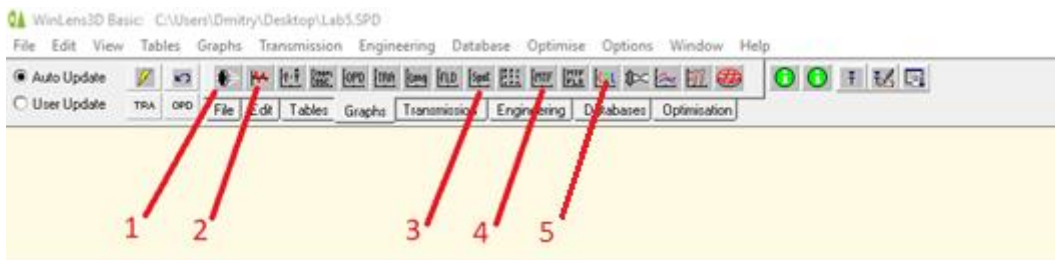
A.



B.

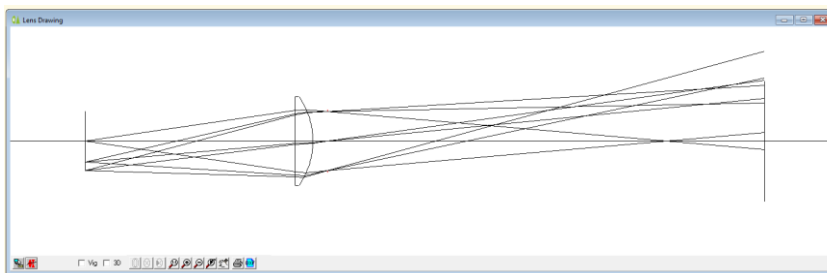


2. Graphs



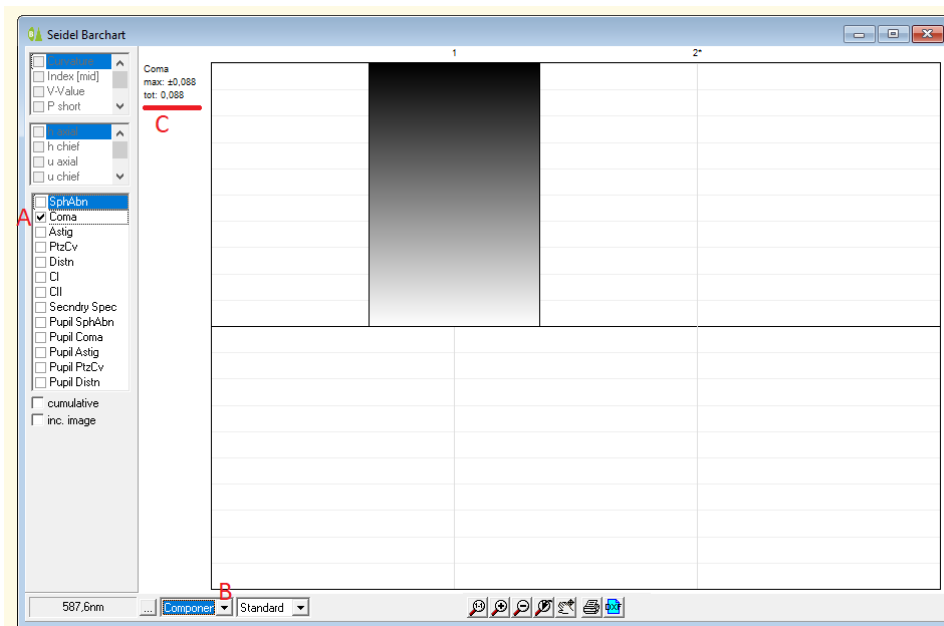
2.1. “Lens drawing”

Shows how the optical system looks like



2.2. Seidel Barchart

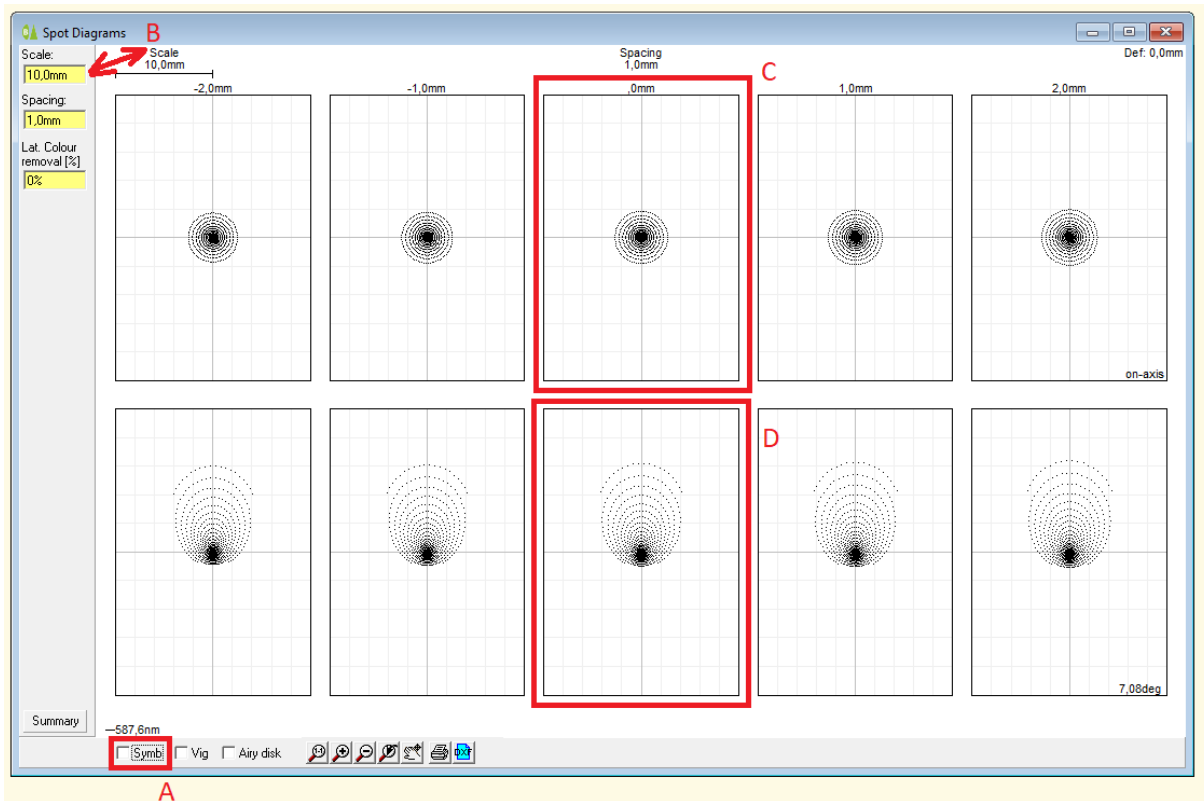
Shows separate aberrations, for example **Coma**:



- Only Coma should be shown;
- “Component” shows aberrations for the system [lens + aperture];
- TOTAL amount of Seidel Coma.

2.3. Spot Diagram

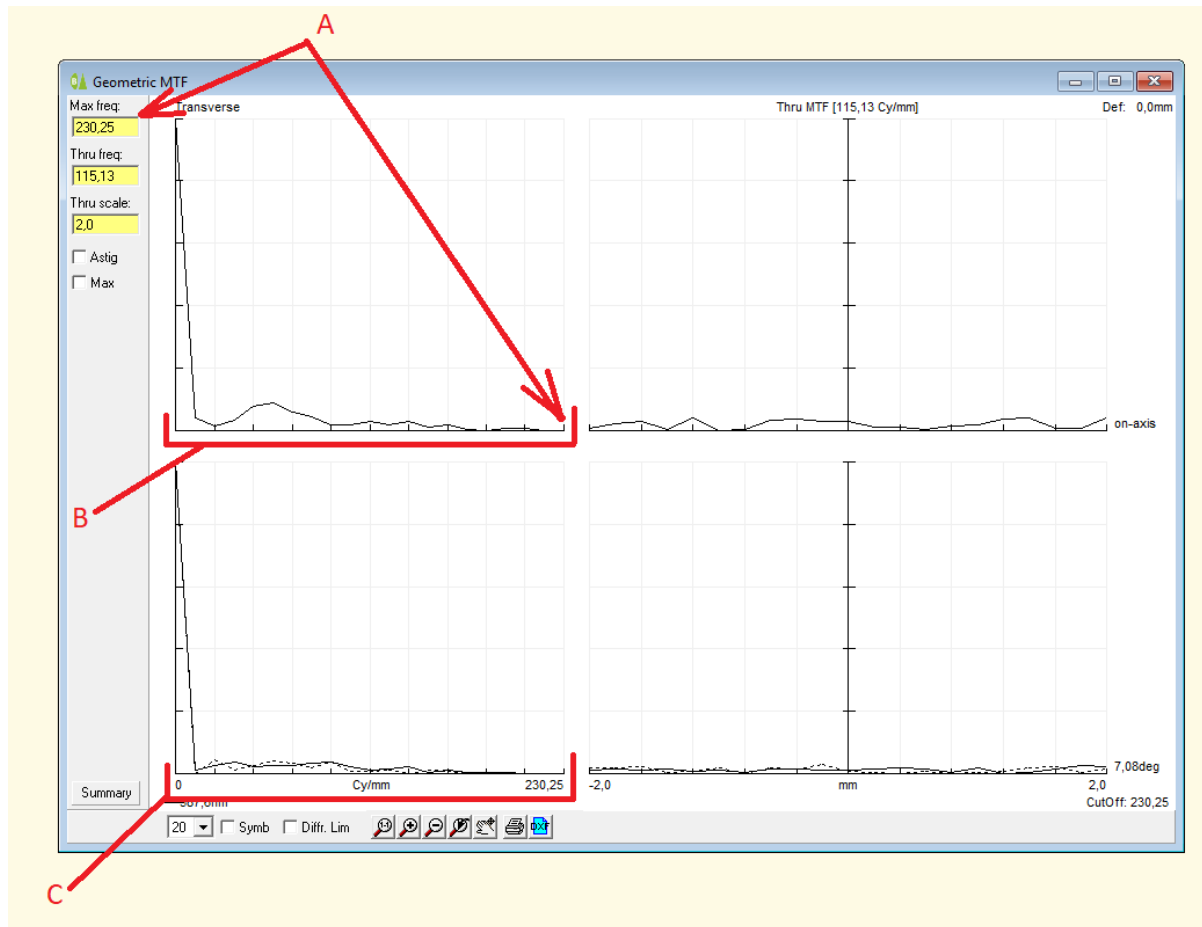
Shows how the image of a point source (punktkälla) will look like.



- A. Make sure to **Un**check “Symb”;
- B. Changes the size of the figures;
- C. On-axis object;
- D. Off-axis object.

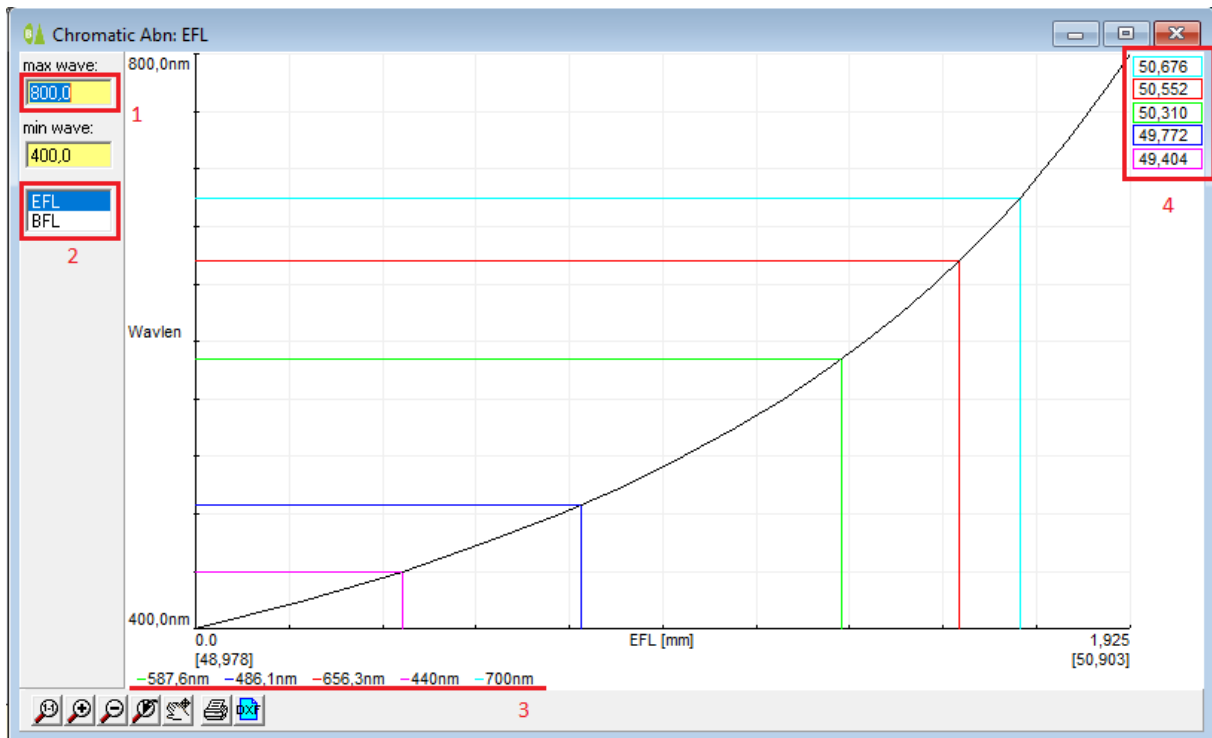
2.4. Geometric MTF

Shows Modulation Transfer Function (MTF):



- A. Maximum spatial frequency (Cycles/mm = lines/mm).
- B. On-axis object point.
- C. Off-axis object point.

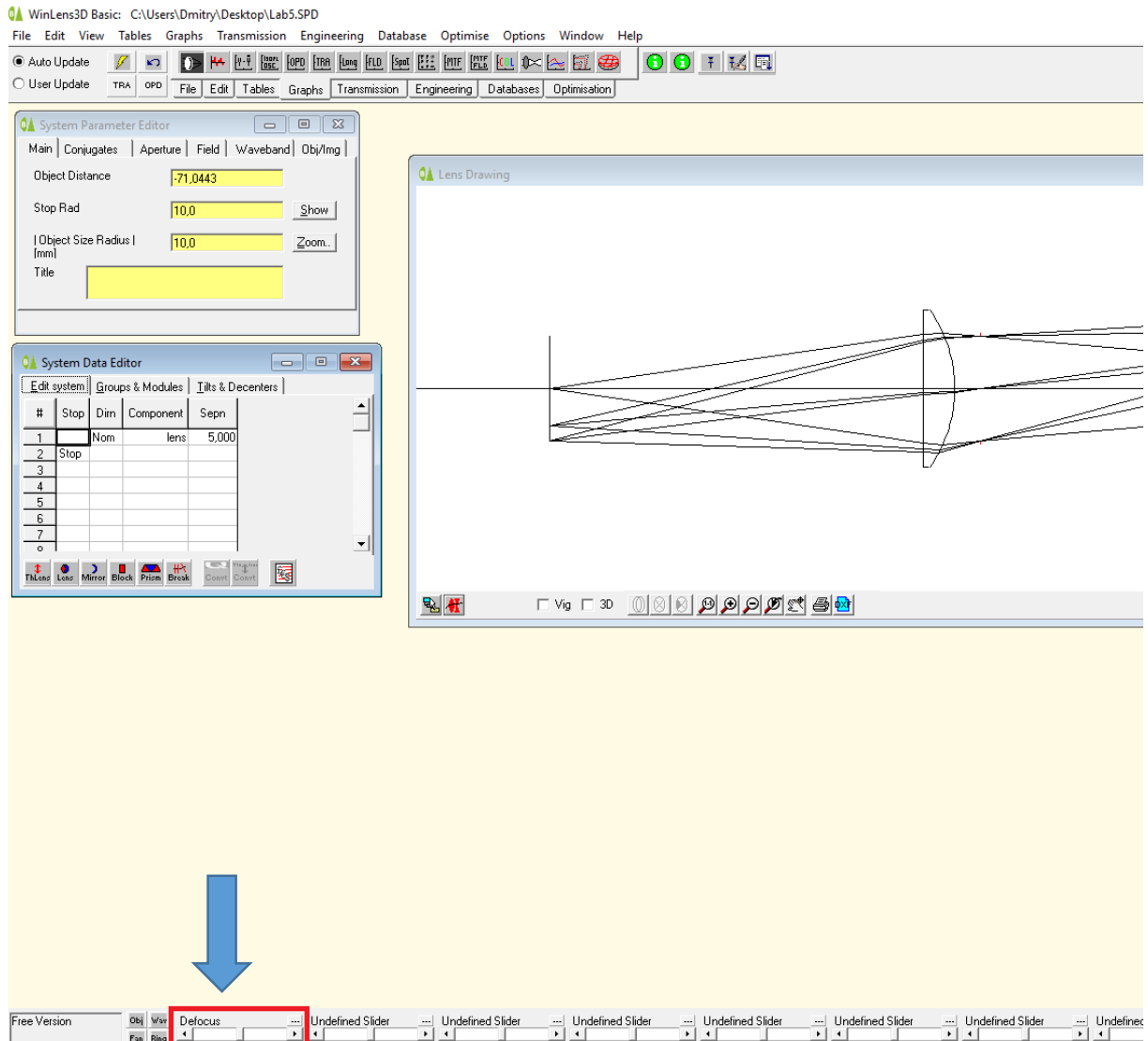
2.5. Chromatic aberration [longitudinal]



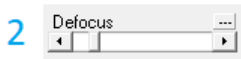
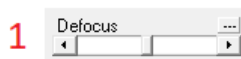
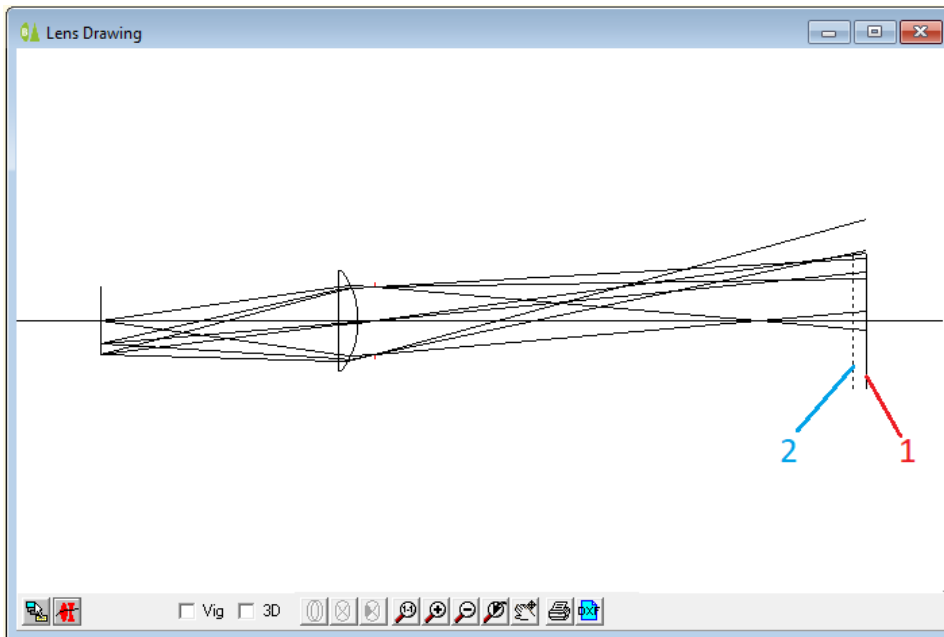
1. Maximal wavelength in nanometers
2. Equivalent Focal Length (EFL) should be chosen
3. Wavelengths in nanometers and their colors on the figure
4. Equivalent Focal Length for each wavelength

3. Additional Functions

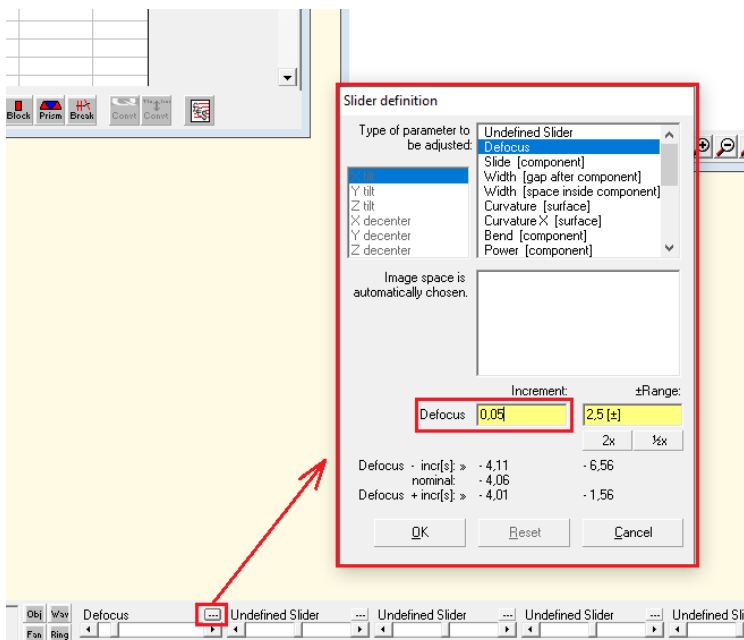
3.1. “Defocus” slider



Clicking on the arrows will move the image plane from the paraxial focus (Defocus the image):



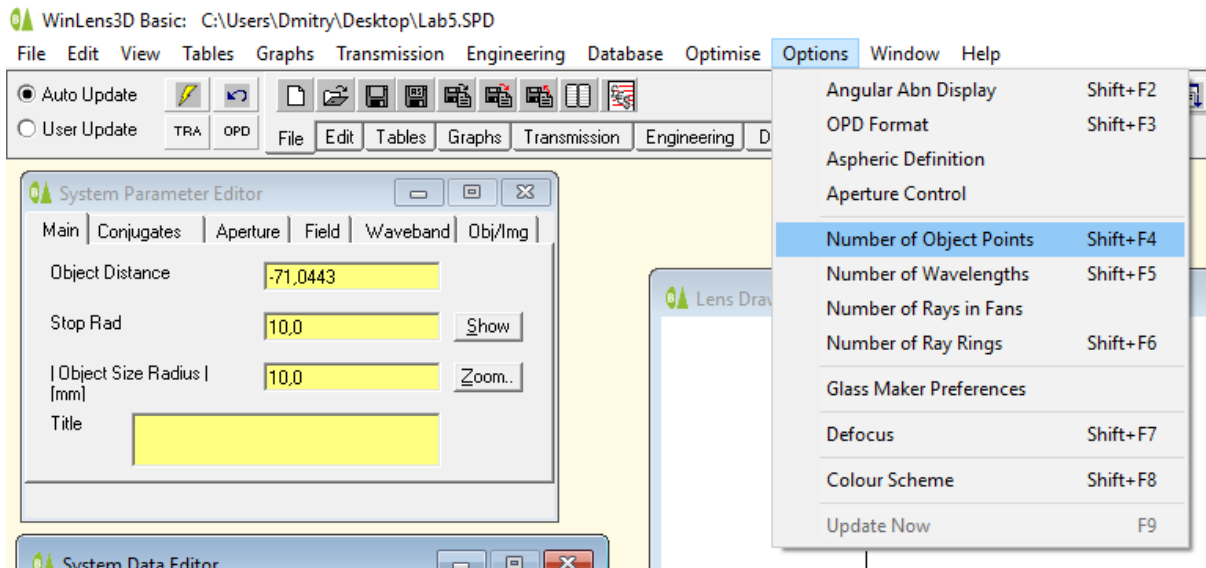
OBS! The defocus step is usually too small (or too big), so it needs to be adjusted. This is done by clicking on the **...** button of the Defocus slider:



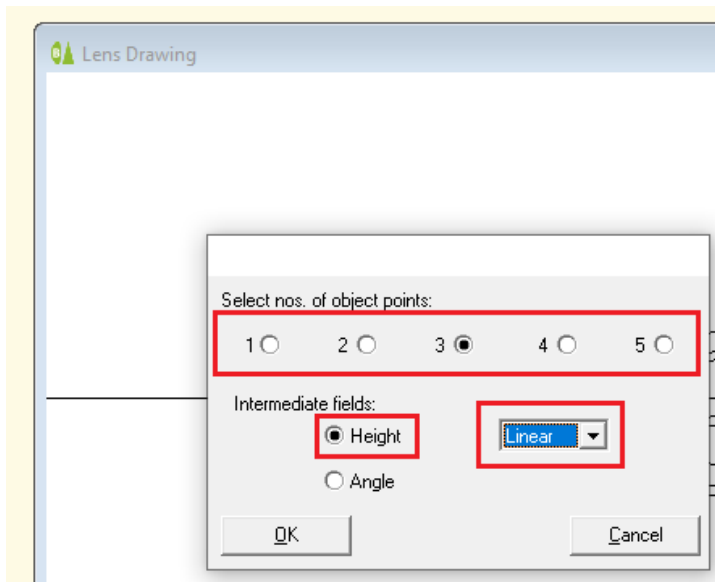
- A. Change "Increment" to bigger/smaller value.
- B. Press "Enter". The "Range" will change automatically.
- C. Press "OK".

3.2. Change number of object points

A. In the top menu press “Options”-> “Number of Object Points”:

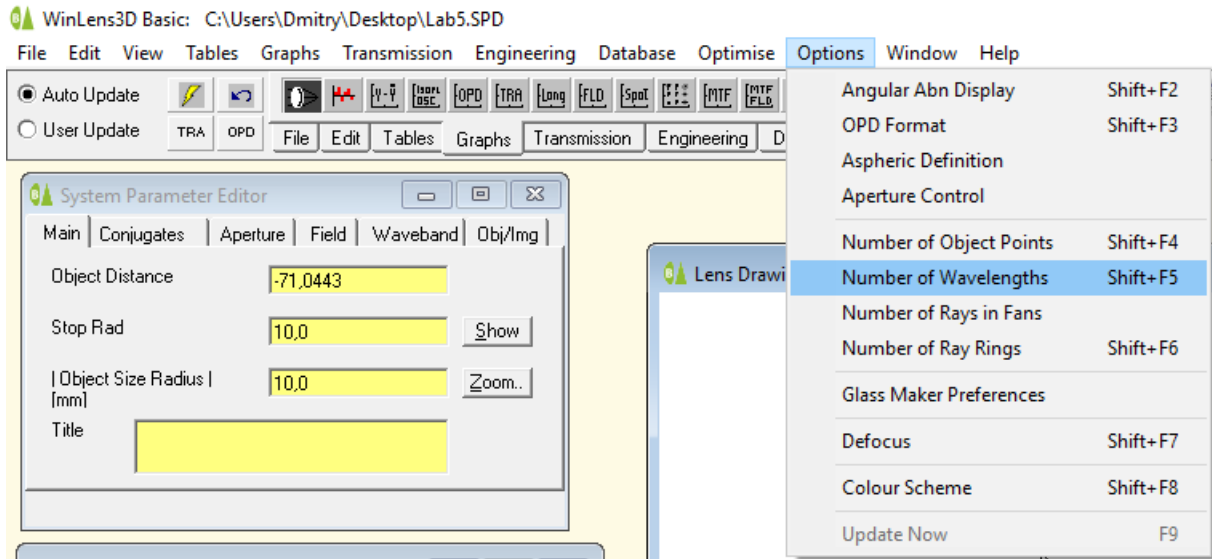


B. In the dialog box choose number of object points and press “OK”:



3.3. Adding more wavelengths (colors)

A. In the top menu press “Options”-> “Number of Wavelengths”



B. In the dialog box choose number of wavelength and press “OK”

