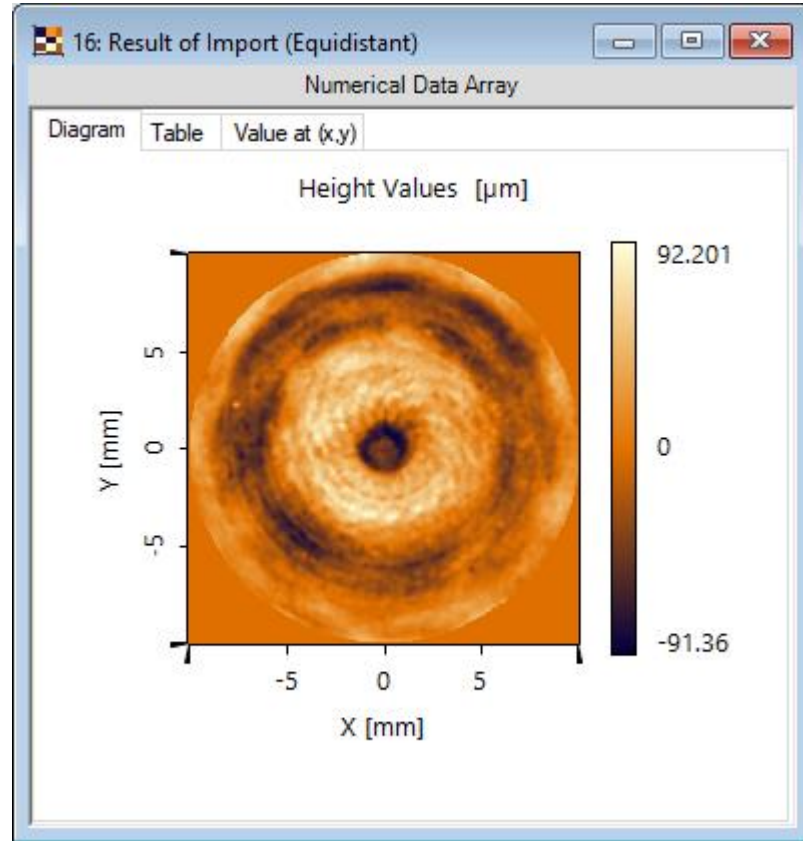


Import of Measured Lens Surface Data

Abstract

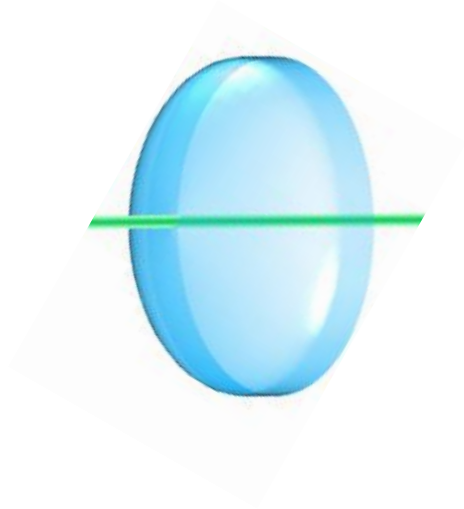


Even for Lenses that are manufactured with high precision, the shape of the lens will differ from the ideal desired shape. This deviation has an influence on the performance of an optical system and the effect should be evaluated. The real difference can be obtained by a non-contact measurement e.g. with a 3D optical profiler instrument. The measured data has to be imported to the simulation software, what is shown in this demonstration.

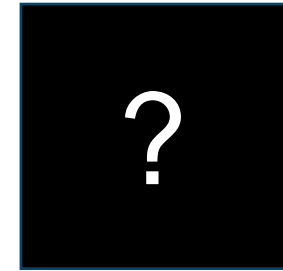
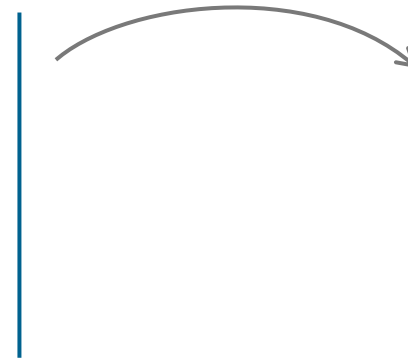
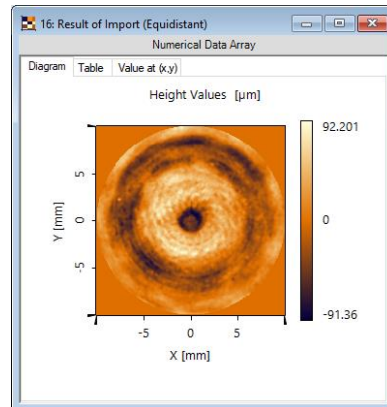
Task: Import of Measured Surface Data of a Lens



plane wave
wavelength: 532nm



lens
with measured height profile



effect of real profile on focal spot

Import of Data (e.g. XYZ point cloud from ZYGO profiler)

```
15: C:\Users\...\2020-03-31_Christian_Hellmann_Import_XYZ_Data_ConvertToEquidistantDataArray.cs
Source Code  Advanced Settings
25 namespace OwnCode {
26     public class VModule {
27         /// <summary>
28         /// Imports point cloud data (a list of x-y-z coordinates) from a text file into a
29         /// Each line should contain three values (x, y, and z) separated by a space.
30         /// Author: Sahil Rajan & Torsten Schöning (both Wyrowski Photonics GmbH)
31         /// Version: 1.1, released under CC-BY 4.0 license on 2020-03-31
32         /// </summary>
33         public void Run() {
34             // begin of user input
35             string fileName = @"D:\surface profile.xyz";
36             // sampling distance in x and y direction in meters
37             VectorD samplingDistanceOfEquidistantData = new VectorD(10e-5, 10e-5);
38             // scaling of height data in meters
39             double Z_Scaling_factor = 1e-3;
40             // end of user input
41         }
42     }
43 }
Error Description
Module started
Thread finished normally
Ln 34
```

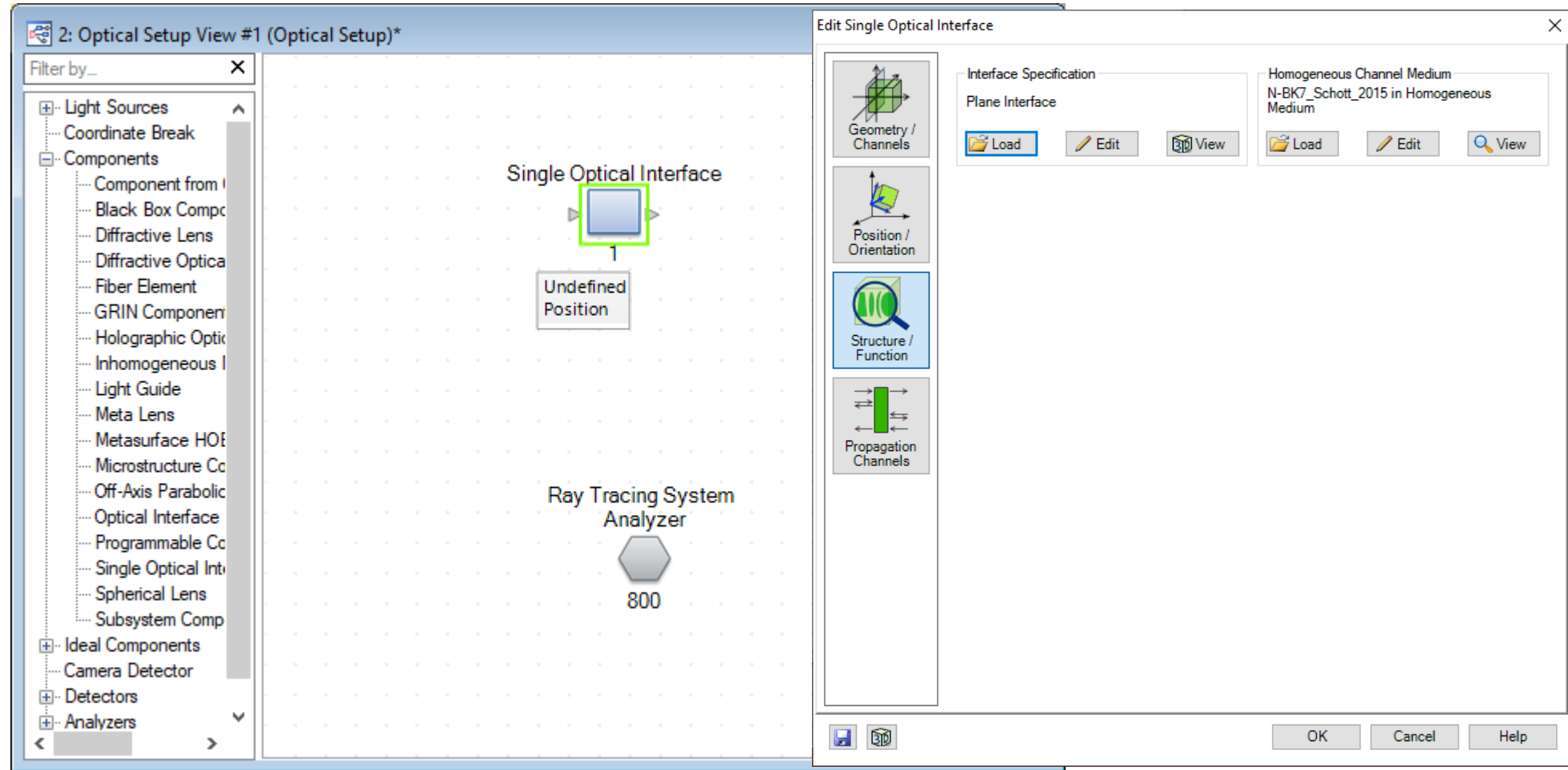
```
surface profile.xyz
1 Zygo XYZ Data File - Format 1
2 0 0 0 0 "
3 0 0 0 0 0
4 0 0 201 201
5
6 "
7 "
8 0 0.5 6.328e-07 0 1 0 1.050e-04 0
9 201 201 0 0 0 0 "
10
```

```
16: Result of Import (Equidistant)
Numerical Data Array
Diagram Table Value at (x,y)
Height Values [µm]
92.201
0
-91.36
Y [mm]
5
0
-5
X [mm]
-5 0 5
```

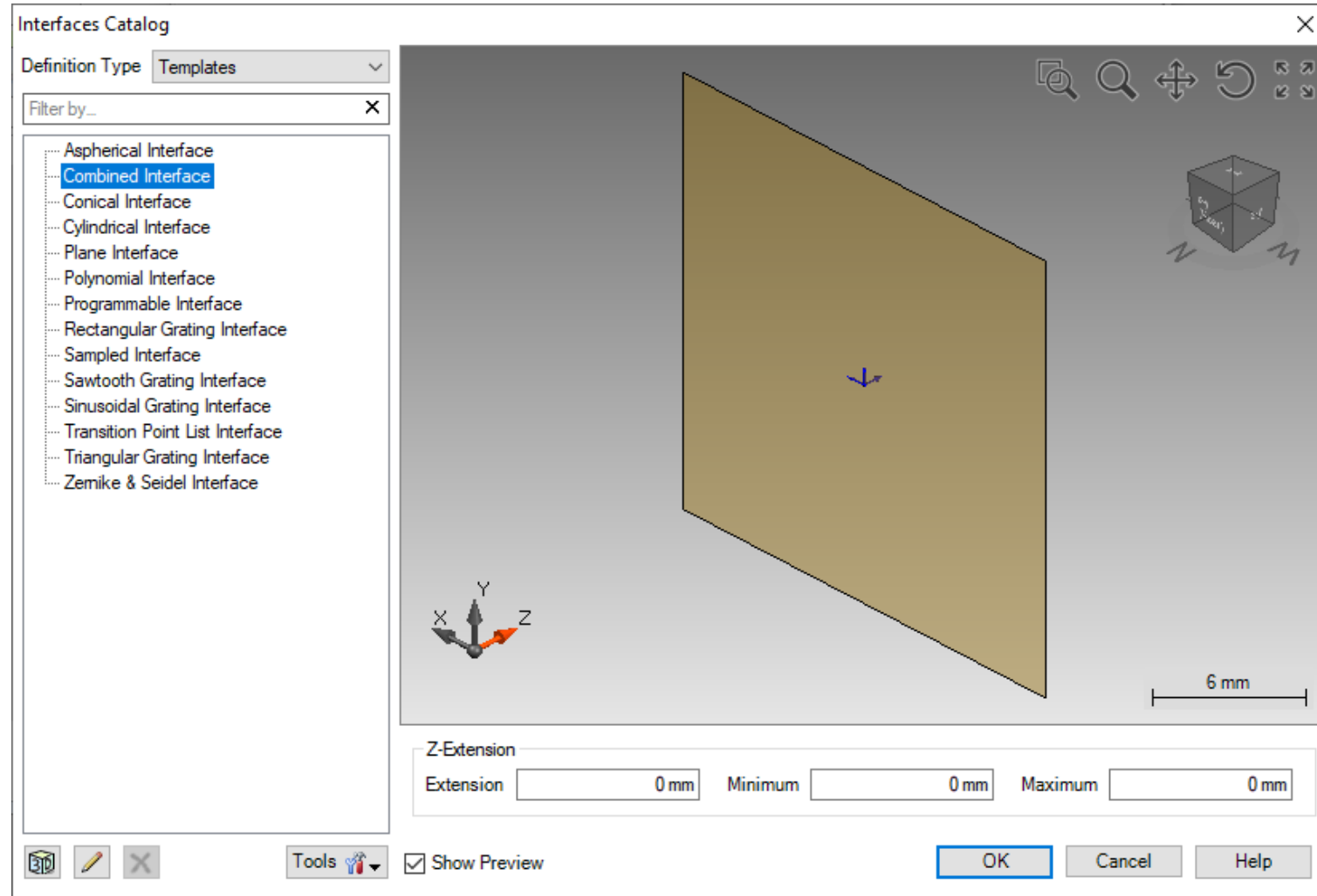
set data properties:

- file name and path
- sampling distance for x- and y-direction
- scaling factor for height (z) data

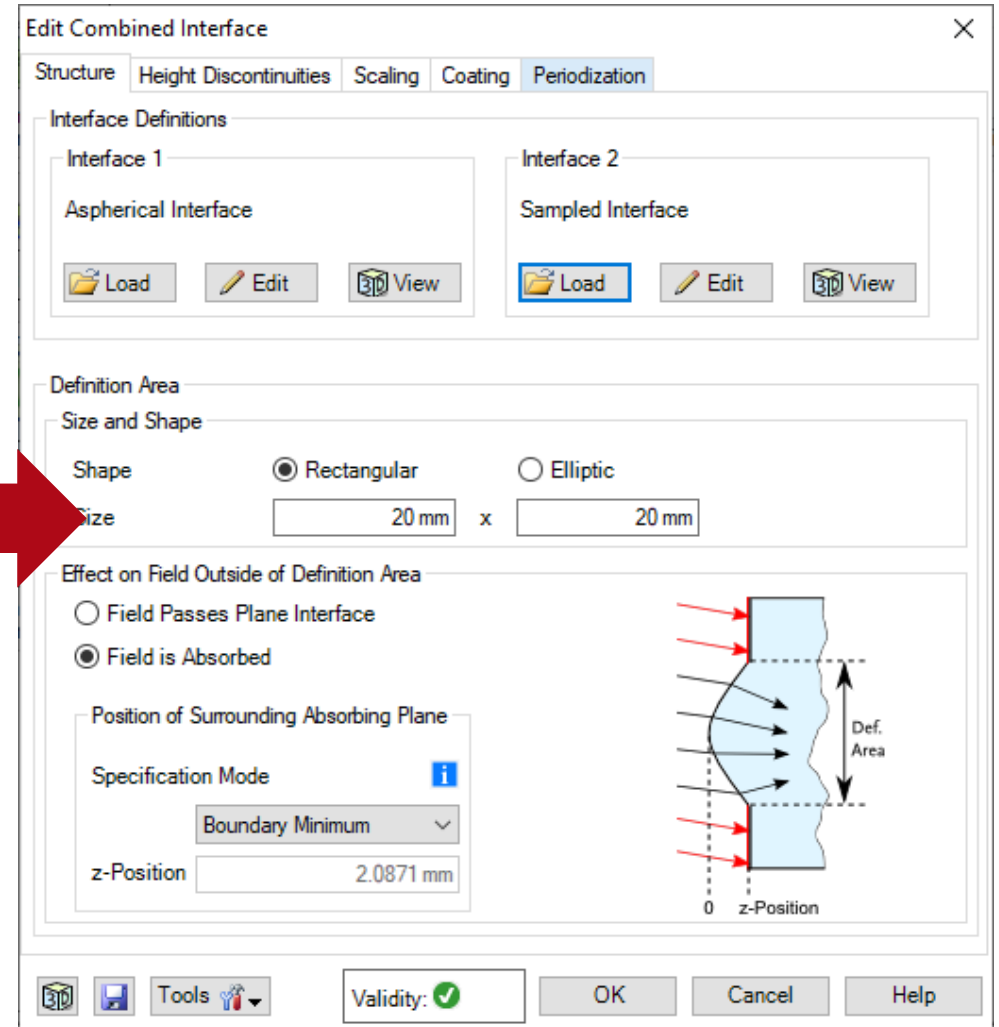
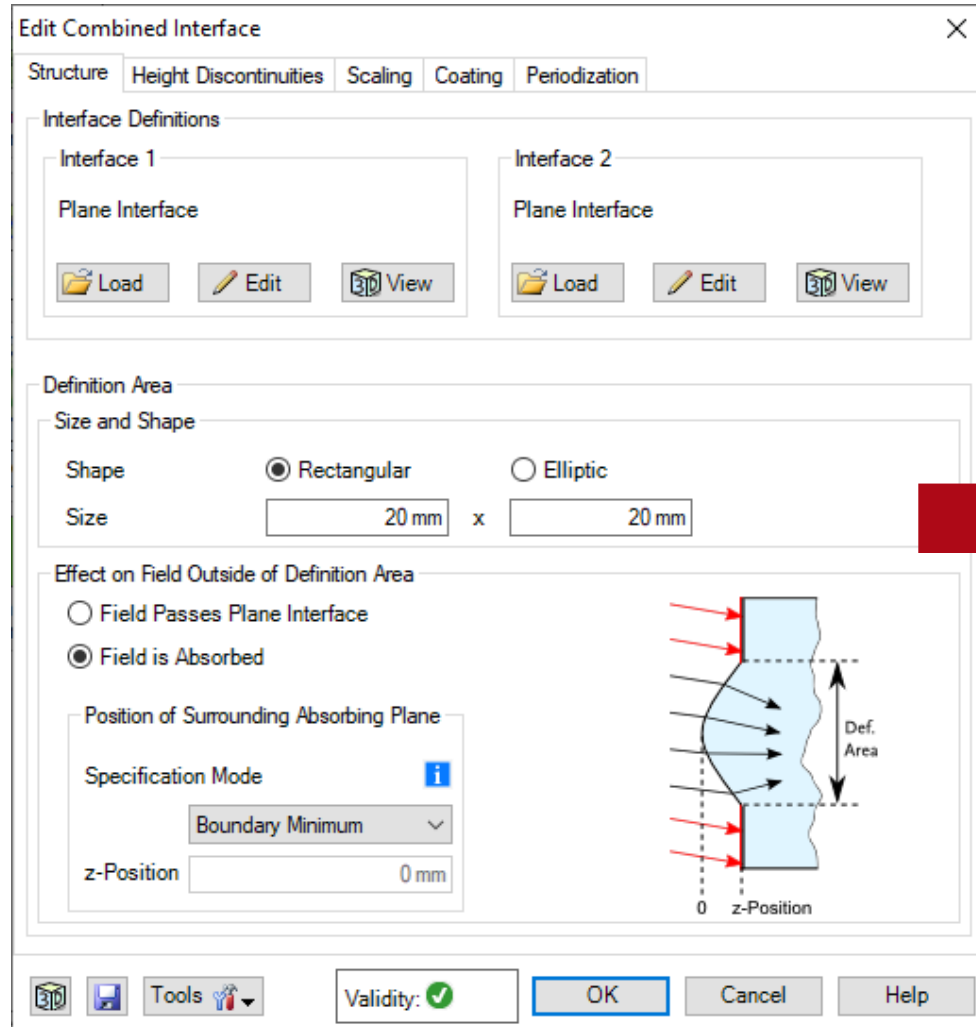
Configuration of Lens Surface



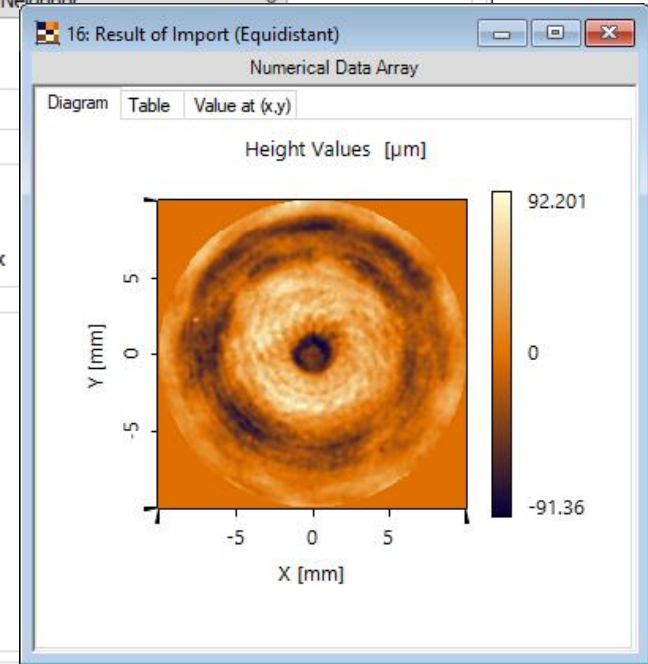
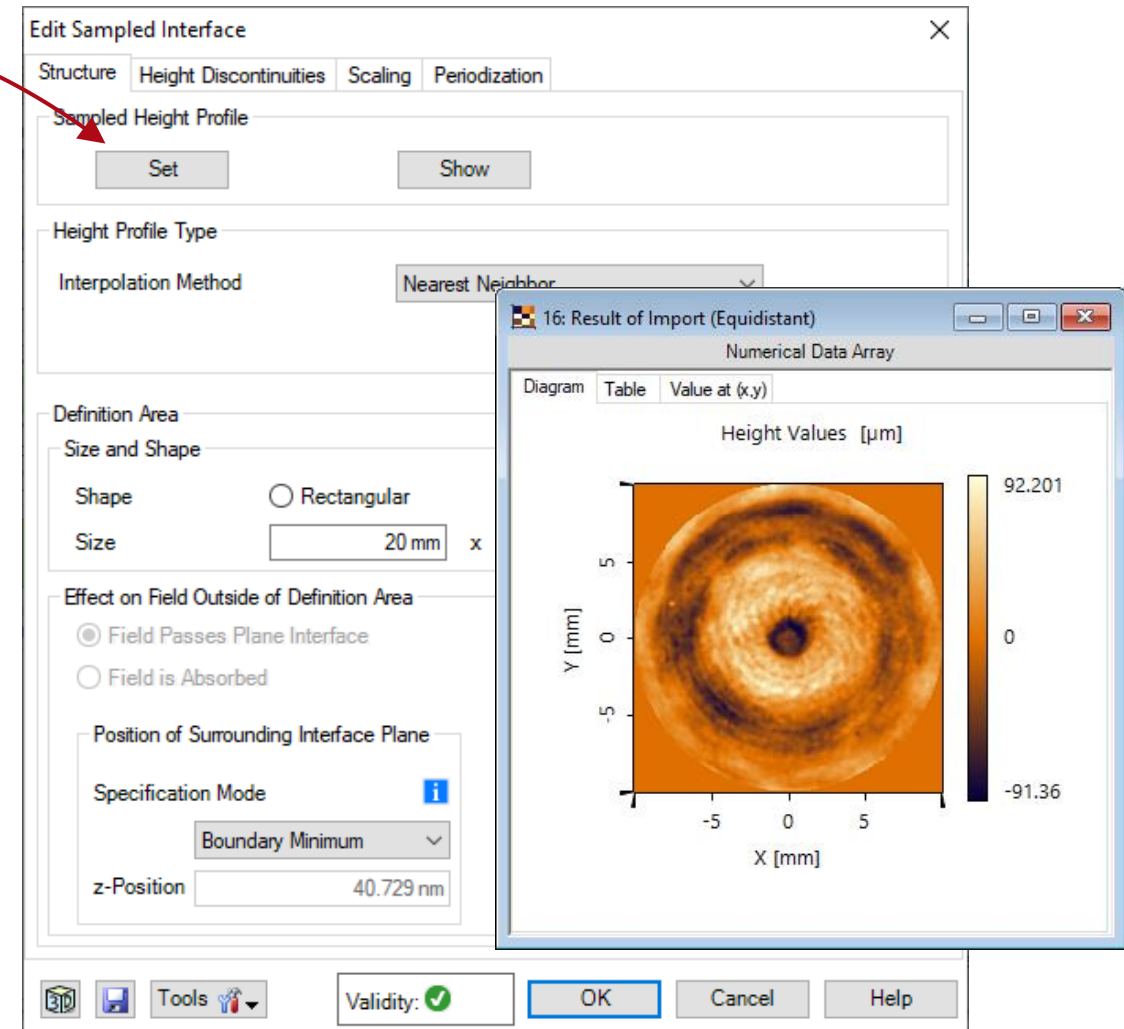
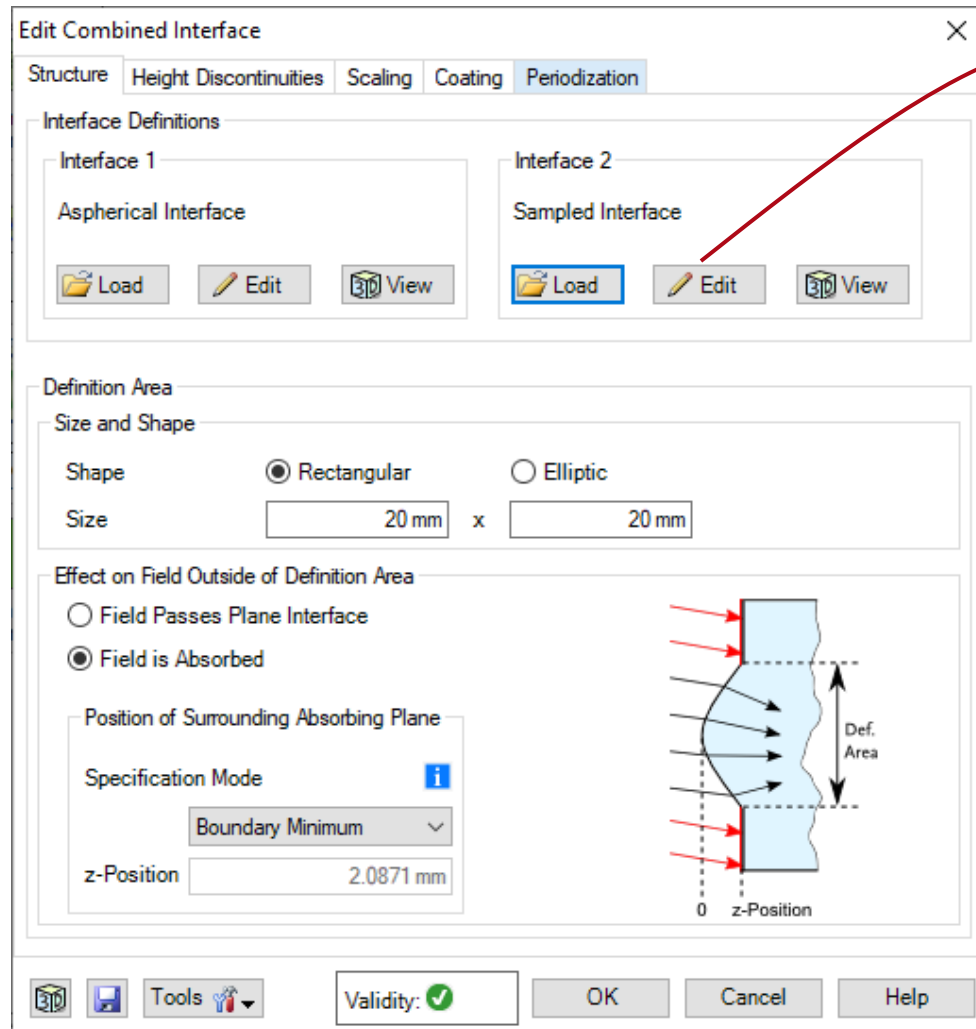
Using a Combined Interface



Setting up the Combined Interface

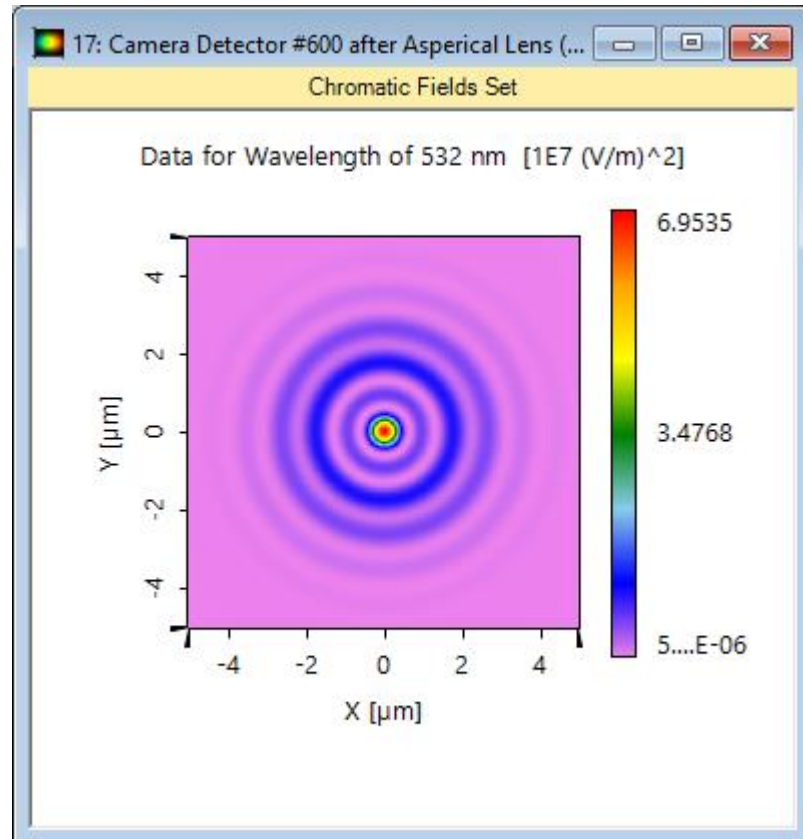


Load the Imported Data to the Sampled Interface

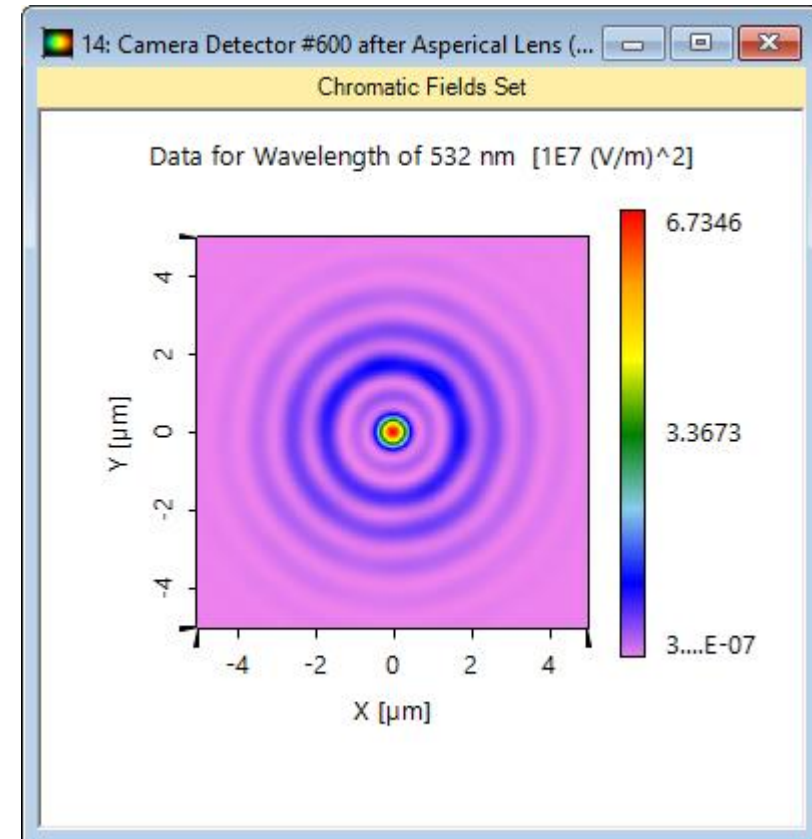


Result

focal spot



focal spot (real profile)



Document Information

title	Import of Measured Lens Surface Data
document code	Demo.0023
version	1.0
VL version used for simulations	2020.1 (Build 3.4)
category	Demo
further reading	
