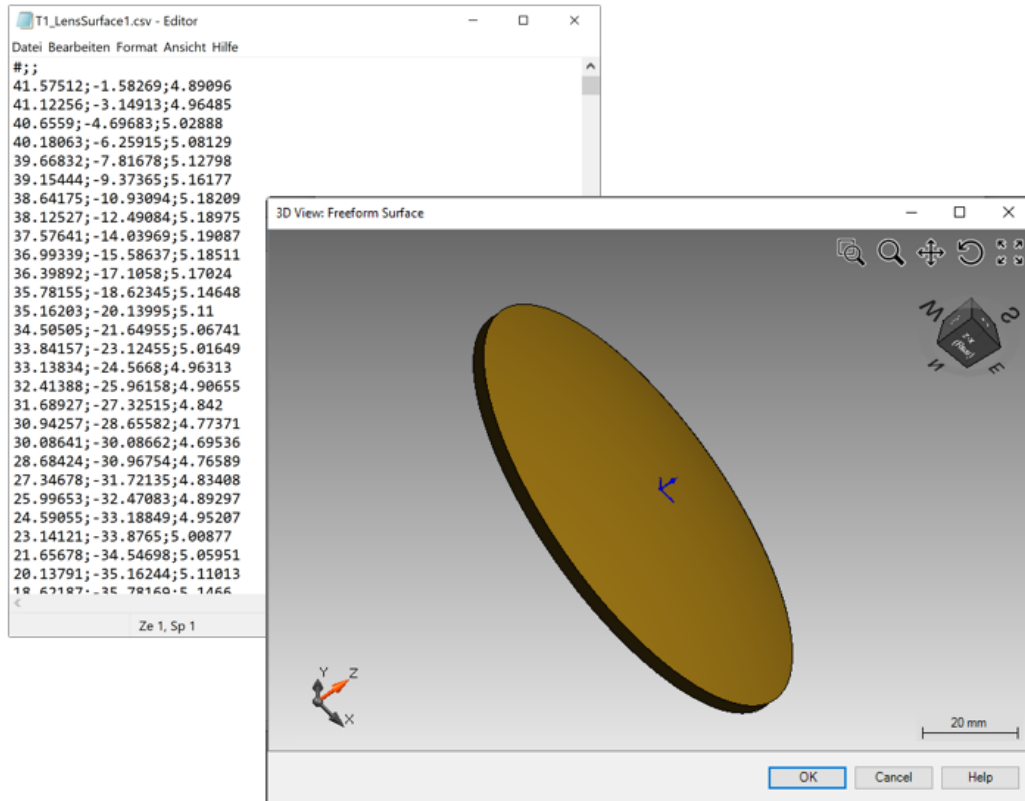


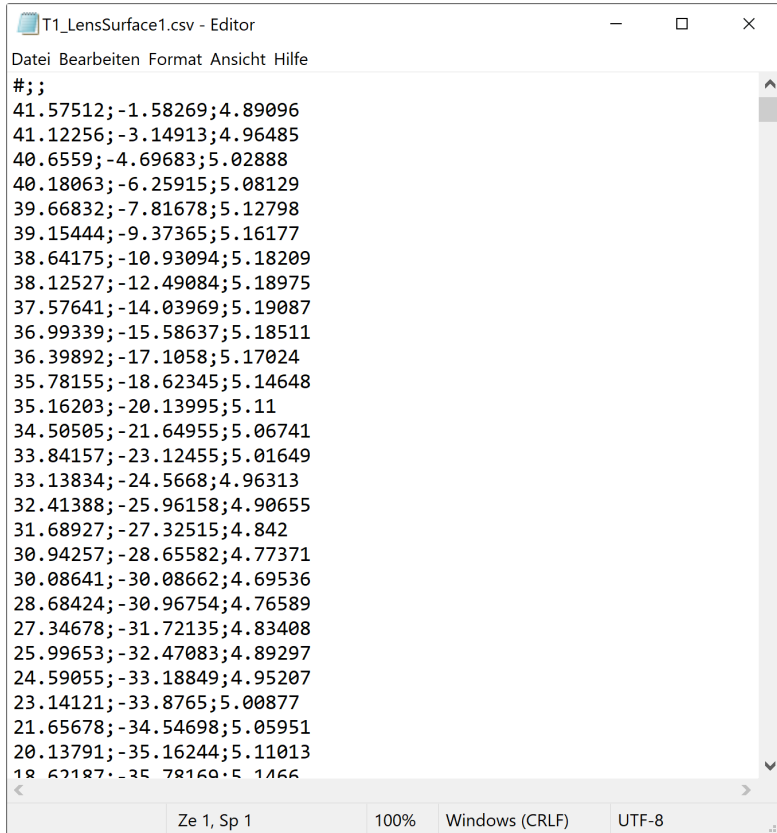
# Import of Non-equidistantly Sampled Interface Data

# Abstract



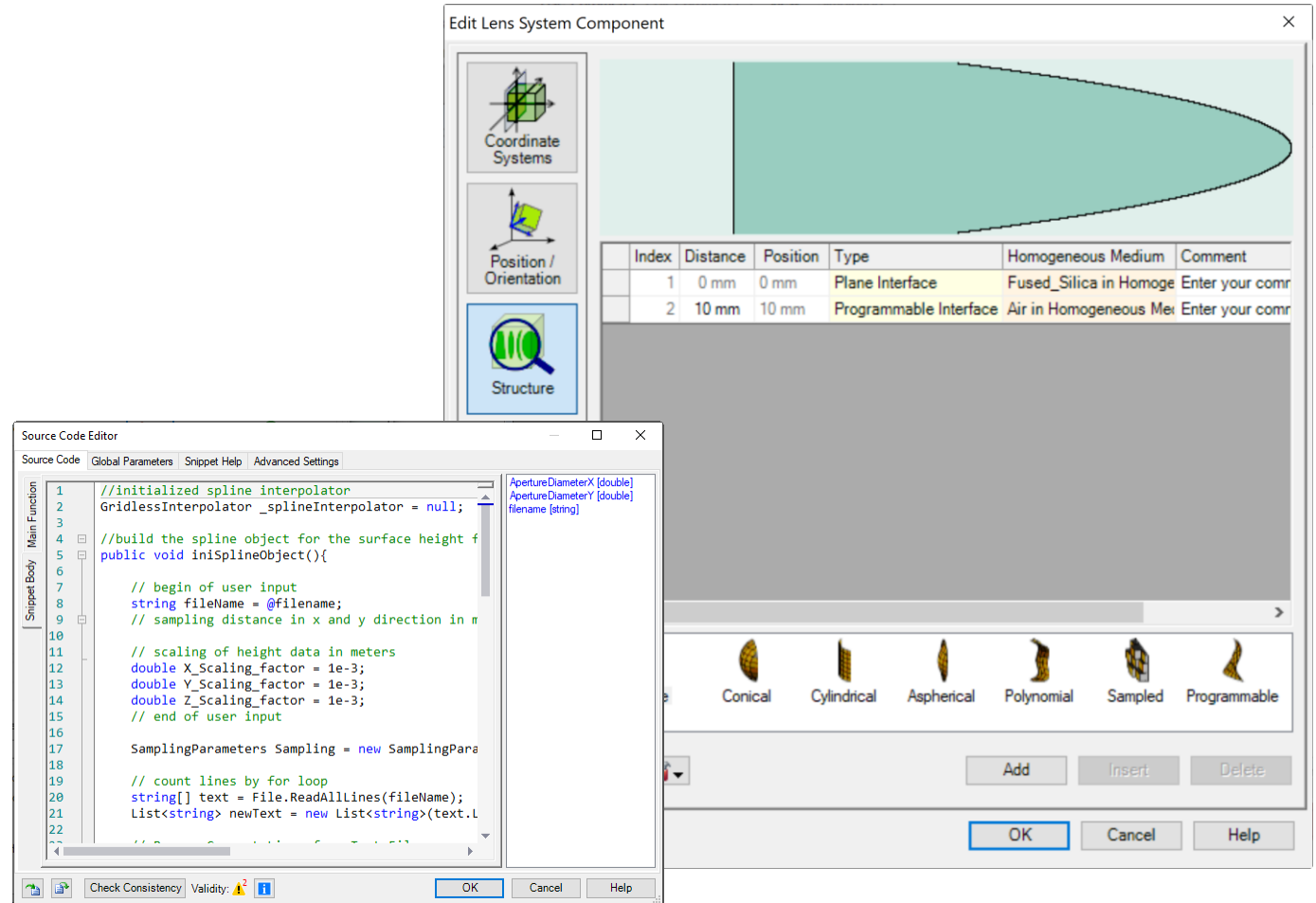
Some software tools provide geometrical information of surfaces in non-equidistantly sampled data. In order to import these information into objects VirtualLab Fusion can operate with, it is necessary to resampled the data according to an equidistant grid. This demonstration shows a programmable Interface which can read a non-equidistant sampled data from a CSV-File and automatically import and resample it by applying spline interpolation methods.

# Task Description



```
T1_LensSurface1.csv - Editor
Datei Bearbeiten Format Ansicht Hilfe
#;;
41.57512;-1.58269;4.89096
41.12256;-3.14913;4.96485
40.6559;-4.69683;5.02888
40.18063;-6.25915;5.08129
39.66832;-7.81678;5.12798
39.15444;-9.37365;5.16177
38.64175;-10.93094;5.18209
38.12527;-12.49084;5.18975
37.57641;-14.03969;5.19087
36.99339;-15.58637;5.18511
36.39892;-17.1058;5.17024
35.78155;-18.62345;5.14648
35.16203;-20.13995;5.11
34.50505;-21.64955;5.06741
33.84157;-23.12455;5.01649
33.13834;-24.5668;4.96313
32.41388;-25.96158;4.90655
31.68927;-27.32515;4.842
30.94257;-28.65582;4.77371
30.08641;-30.08662;4.69536
28.68424;-30.96754;4.76589
27.34678;-31.72135;4.83408
25.99653;-32.47083;4.89297
24.59055;-33.18849;4.95207
23.14121;-33.8765;5.00877
21.65678;-34.54698;5.05951
20.13791;-35.16244;5.11013
18.62187;-35.78160;5.1466
```

Import a list of datapoints into VirtualLab Fusion



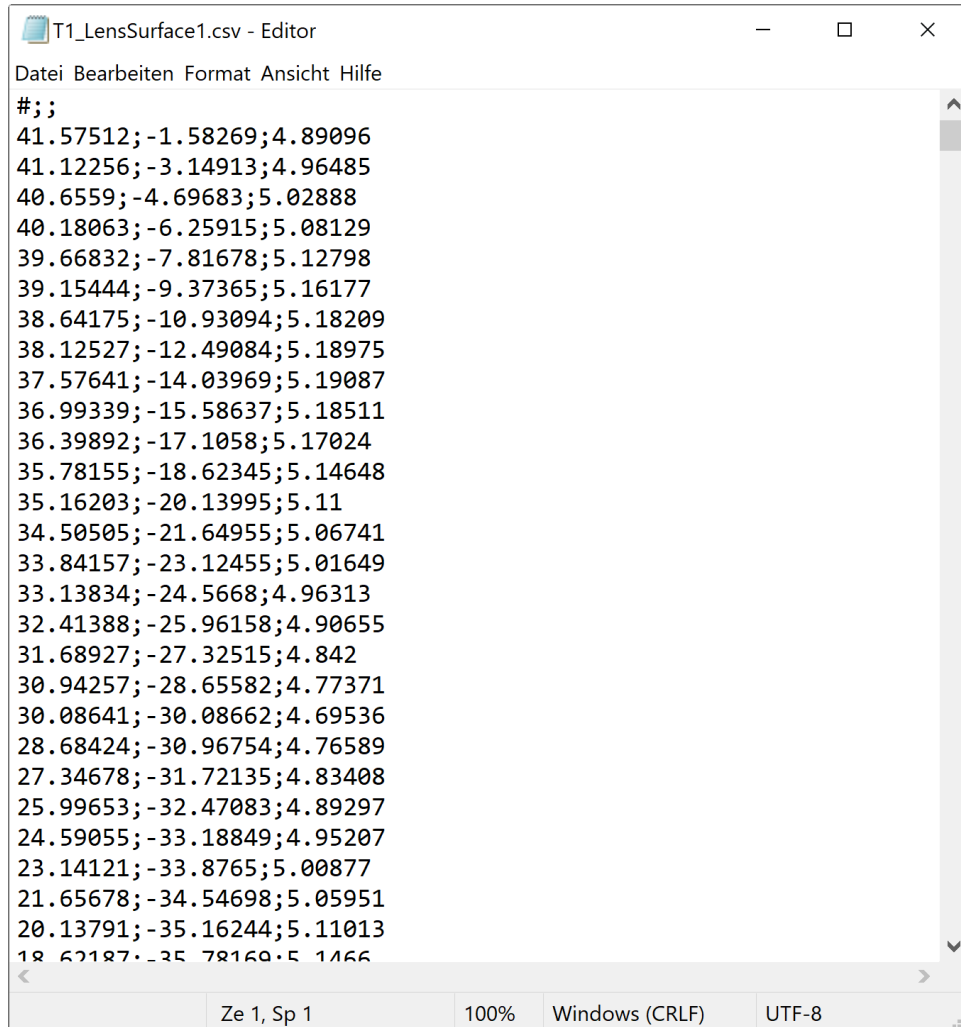
The 'Edit Lens System Component' dialog box shows a 3D visualization of a lens component and a table of its properties:

Index	Distance	Position	Type	Homogeneous Medium	Comment
1	0 mm	0 mm	Plane Interface	Fused_Silica in Homoge	Enter your comr
2	10 mm	10 mm	Programmable Interface	Air in Homogeneous Me	Enter your comr

The Source Code Editor shows the following code:

```
1 //initialized spline interpolator
2 GridlessInterpolator _splineInterpolator = null;
3
4 //build the spline object for the surface height f
5 public void iniSplineObject(){
6
7     // begin of user input
8     string fileName = @filename;
9     // sampling distance in x and y direction in m
10
11     // scaling of height data in meters
12     double X_Scaling_factor = 1e-3;
13     double Y_Scaling_factor = 1e-3;
14     double Z_Scaling_factor = 1e-3;
15     // end of user input
16
17     SamplingParameters Sampling = new SamplingPara
18
19     // count lines by for loop
20     string[] text = File.ReadAllLines(fileName);
21     List<string> newText = new List<string>(text.L
22
```

# Inputformat



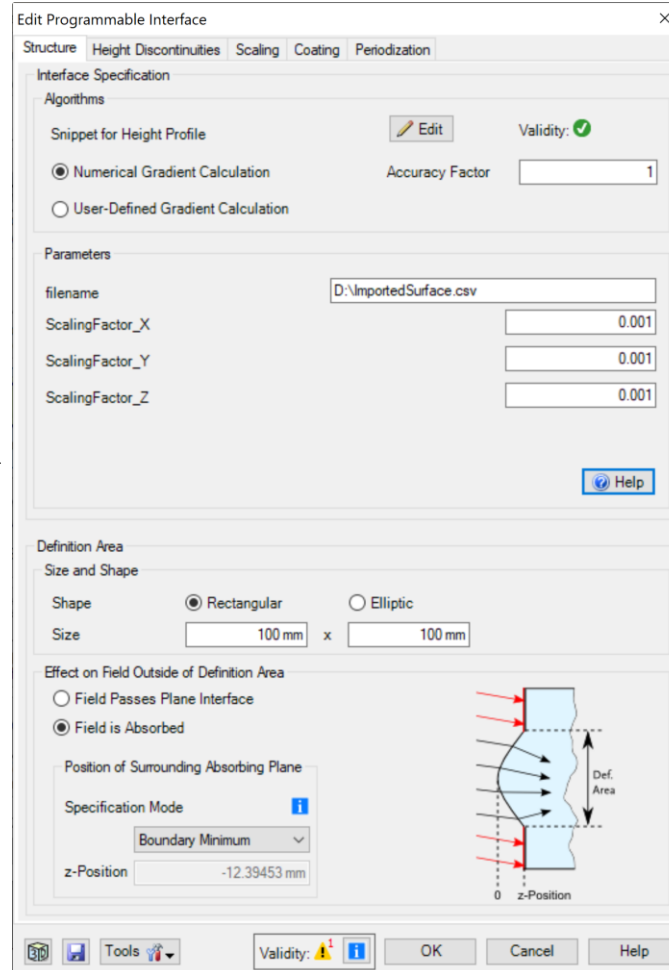
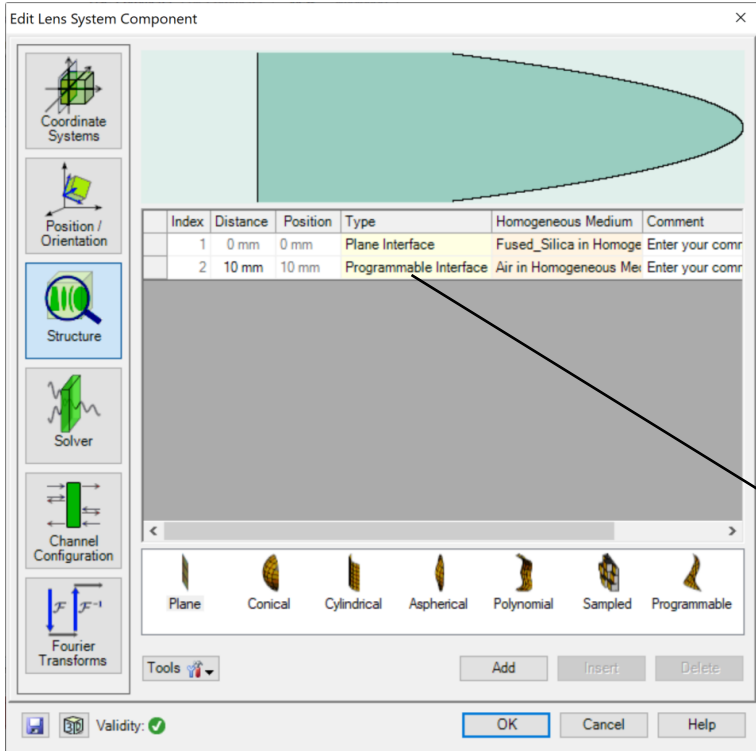
The screenshot shows a text editor window titled "T1\_LensSurface1.csv - Editor". The window contains a list of data points in a CSV format, each consisting of three numbers separated by semicolons. The data points are as follows:

```
#; ;  
41.57512;-1.58269;4.89096  
41.12256;-3.14913;4.96485  
40.6559;-4.69683;5.02888  
40.18063;-6.25915;5.08129  
39.66832;-7.81678;5.12798  
39.15444;-9.37365;5.16177  
38.64175;-10.93094;5.18209  
38.12527;-12.49084;5.18975  
37.57641;-14.03969;5.19087  
36.99339;-15.58637;5.18511  
36.39892;-17.1058;5.17024  
35.78155;-18.62345;5.14648  
35.16203;-20.13995;5.11  
34.50505;-21.64955;5.06741  
33.84157;-23.12455;5.01649  
33.13834;-24.5668;4.96313  
32.41388;-25.96158;4.90655  
31.68927;-27.32515;4.842  
30.94257;-28.65582;4.77371  
30.08641;-30.08662;4.69536  
28.68424;-30.96754;4.76589  
27.34678;-31.72135;4.83408  
25.99653;-32.47083;4.89297  
24.59055;-33.18849;4.95207  
23.14121;-33.8765;5.00877  
21.65678;-34.54698;5.05951  
20.13791;-35.16244;5.11013  
18.62187;-35.78169;5.1466
```

The status bar at the bottom of the editor shows "Ze 1, Sp 1", "100%", "Windows (CRLF)", and "UTF-8".

- Lens data must be given as a .csv file with the format x;y;z where x and y stand for the coordinate and z for the height value of x and y
- Datalist must start with “#” and end with “#”

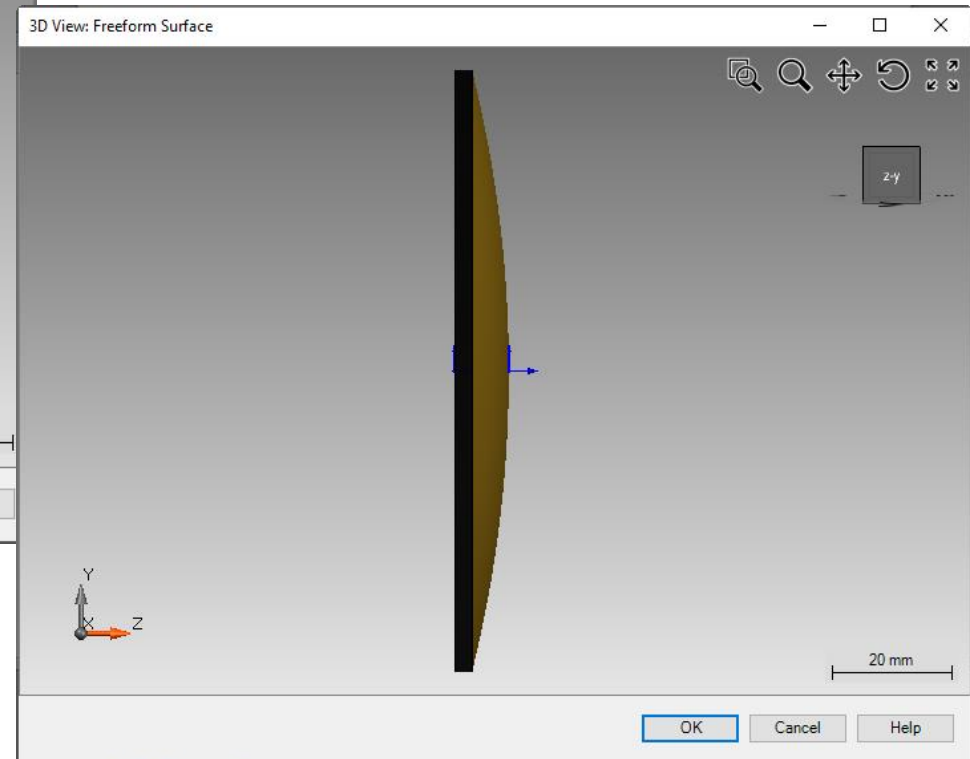
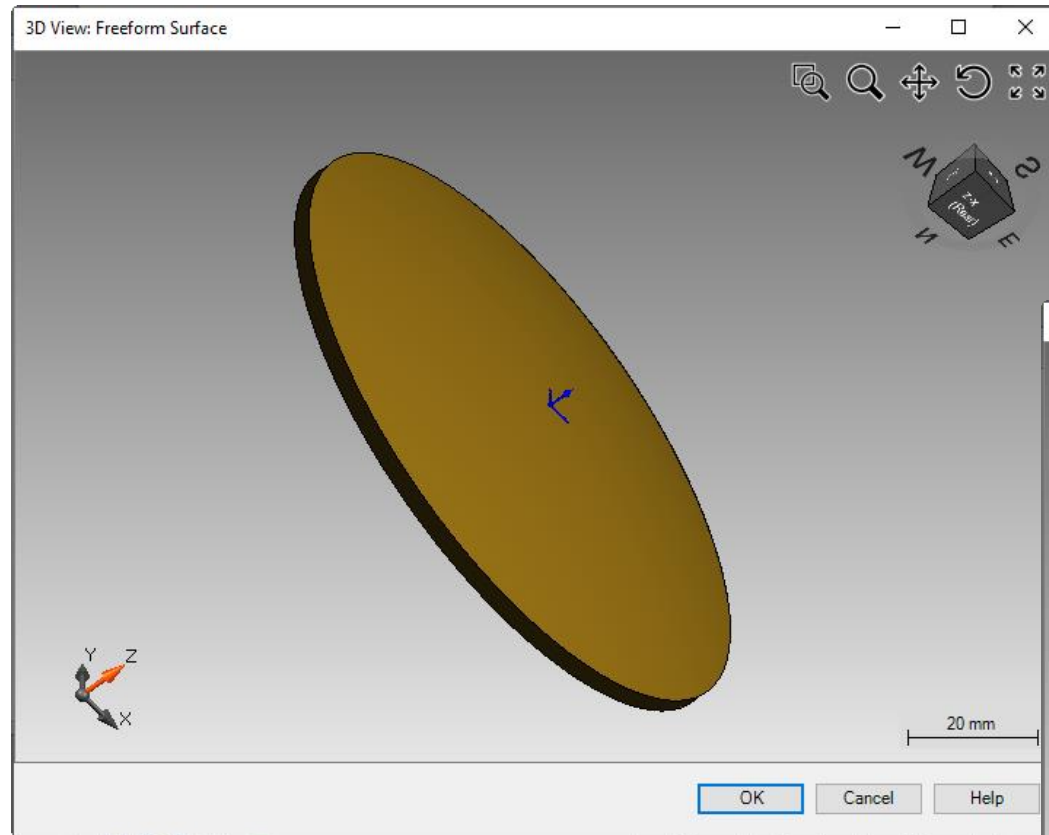
# System Setup



Location of the file

Factors multiplied on all values of a column  
(to represent units)

# Resulting Surface



# Document Information

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title	Import of Non-equidistantly Sampled Interface Data
document code	Demo.0029
version	1.0
VL version used for simulations	VirtualLab Fusion 2020.1
category	Demo
further reading	

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