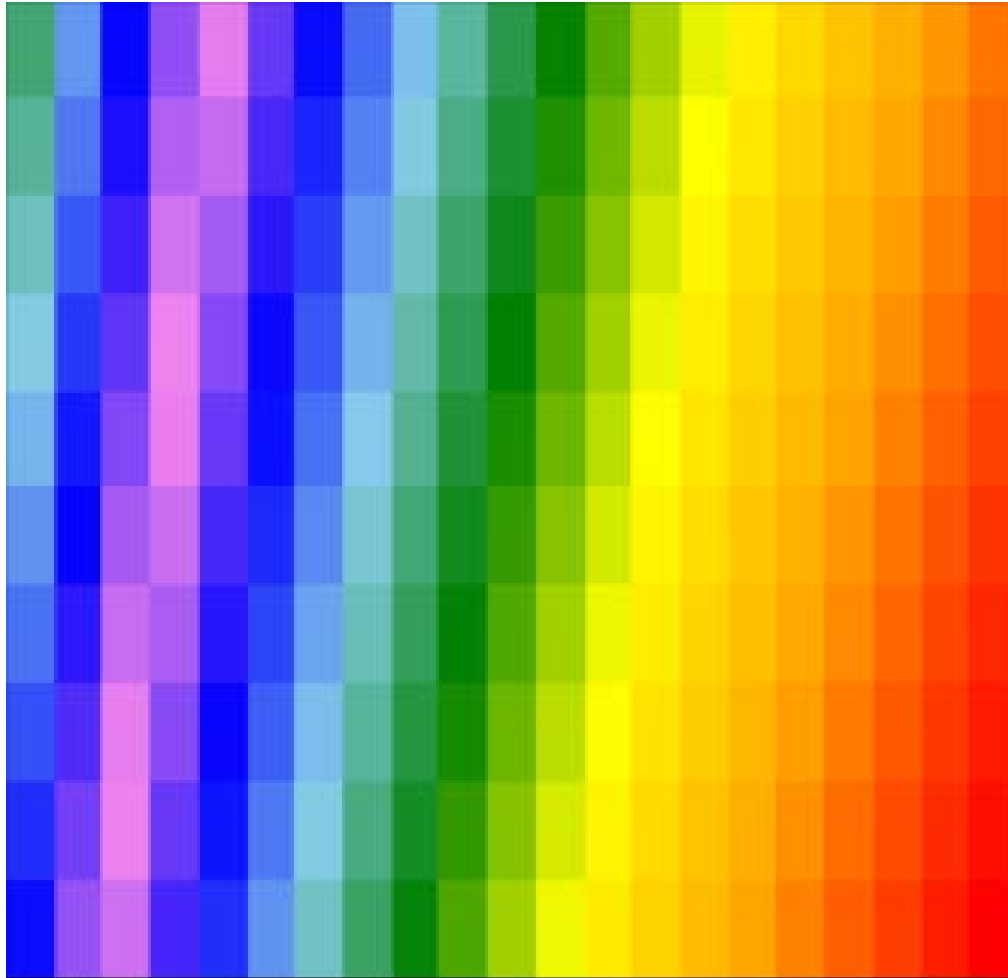


Programming a Scanning Parameter Run

Abstract



In VirtualLab Fusion, the Programmable Parameter Run allows the user to scan parameters of a given optical system in a completely flexible way. A convex-plano single lens is taken as an example, and with the Programmable Parameter Run, the radius of the first lens surface and its center thickness are scanned. With an plane wave as the input for the lens, the beam diameter at the focal plane is investigated.

Task Description & Sample Code



Convex-Planar lens
Radius of First Interface: R
Center Thickness: d

Task:

For the focusing system with a single lens, perform a scanning parameter run with the radius of the first interface and the center thickness of a focusing lens

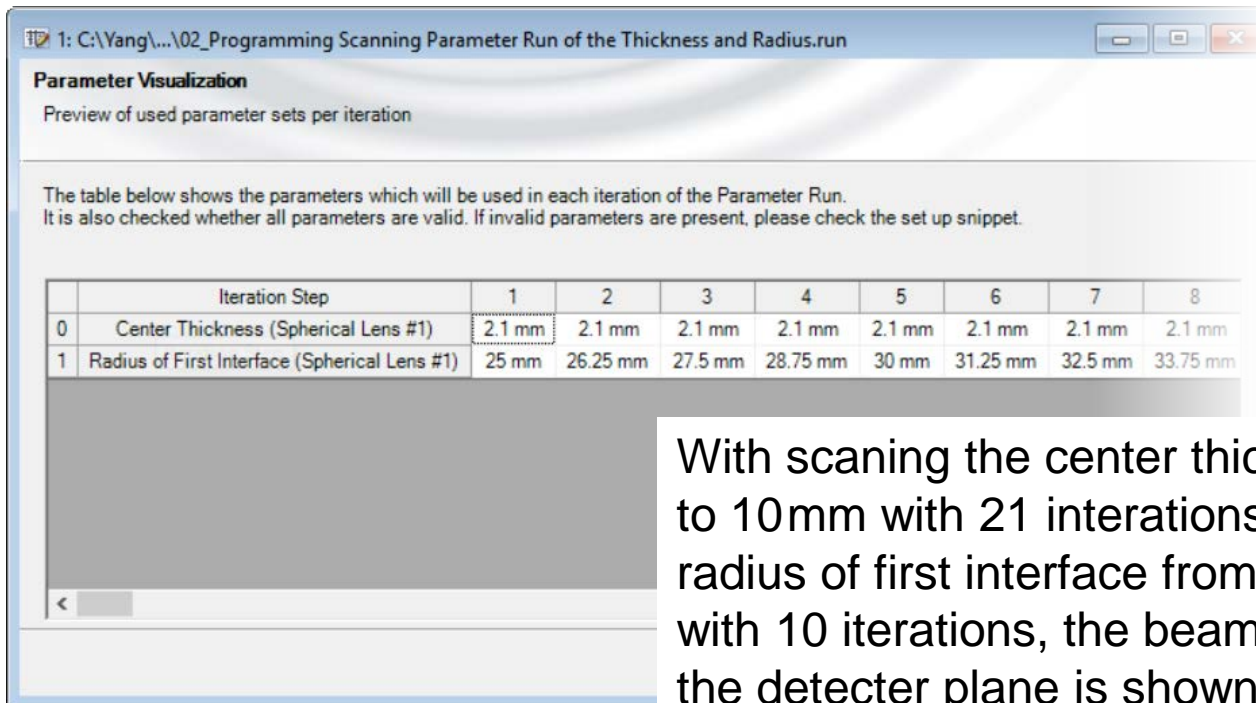
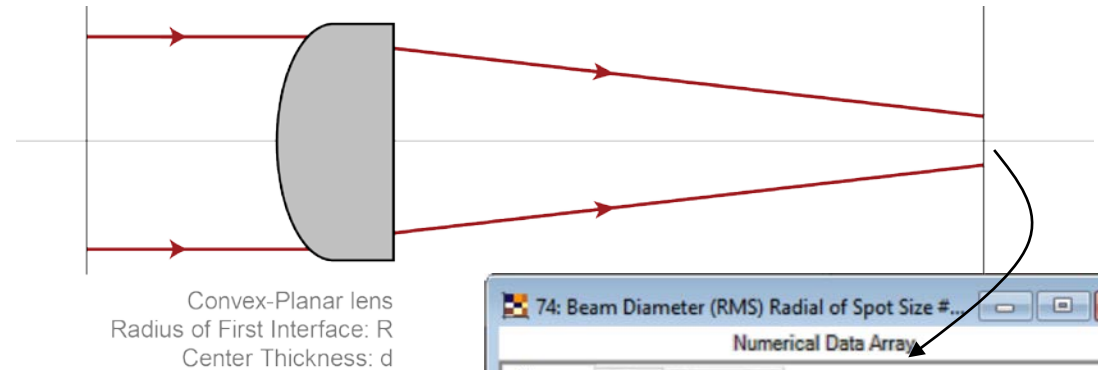
Main Function

```
1
2 double[,] parameters = new double[NumberOfParameters, NumberOfIterations];
3
4 double stepWidthFirstParameter = (MaximumValues[0] - MinimumValues[0]) / (NumberOfIterationsRadius - 1);
5 double stepWidthSecondParameter = (MaximumValues[1] - MinimumValues[1]) / (NumberOfIterationsThickness - 1);
6
7 int iteration = 0;
8
9 for (int i = 0; i < NumberOfIterationsRadius; i++) {
10     for (int j = 0; j < NumberOfIterationsThickness; j++) {
11         parameters[0, iteration] = MinimumValues[0] + stepWidthFirstParameter * i;
12         parameters[1, iteration] = MinimumValues[1] + stepWidthSecondParameter * j;
13         iteration++;
14     }
15 }
16
17 return parameters;
18
19
```

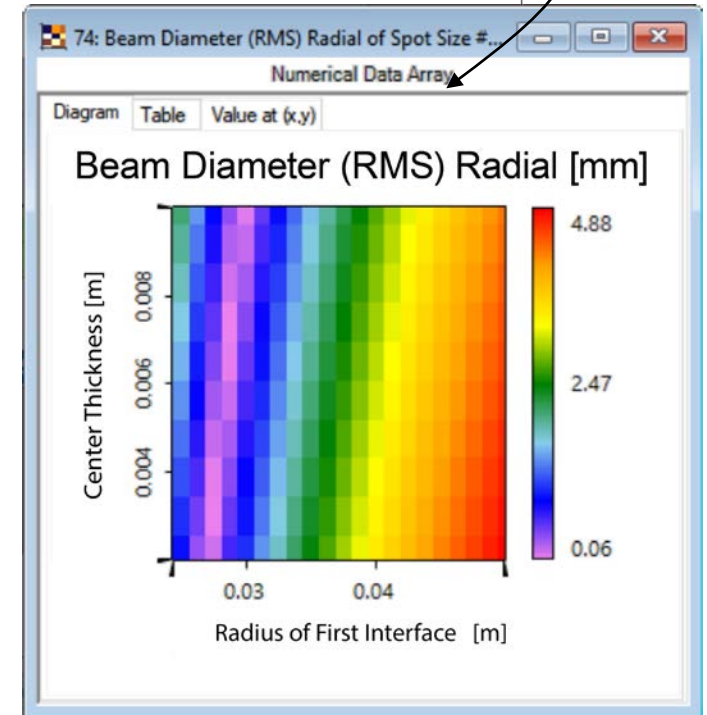
Experiment and Result

Global Parameters (User Defined)

Variable	Value
double NumberOfIterationsRadius	10
double NumberOfIterationsThickness	21



With scanning the center thickness from 2.1 to 10mm with 21 iterations, and the radius of first interface from 25 to 50mm with 10 iterations, the beam diameter on the detector plane is shown in 2D data array.



Document Information

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VL version used for simulations	7.4.0.49
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