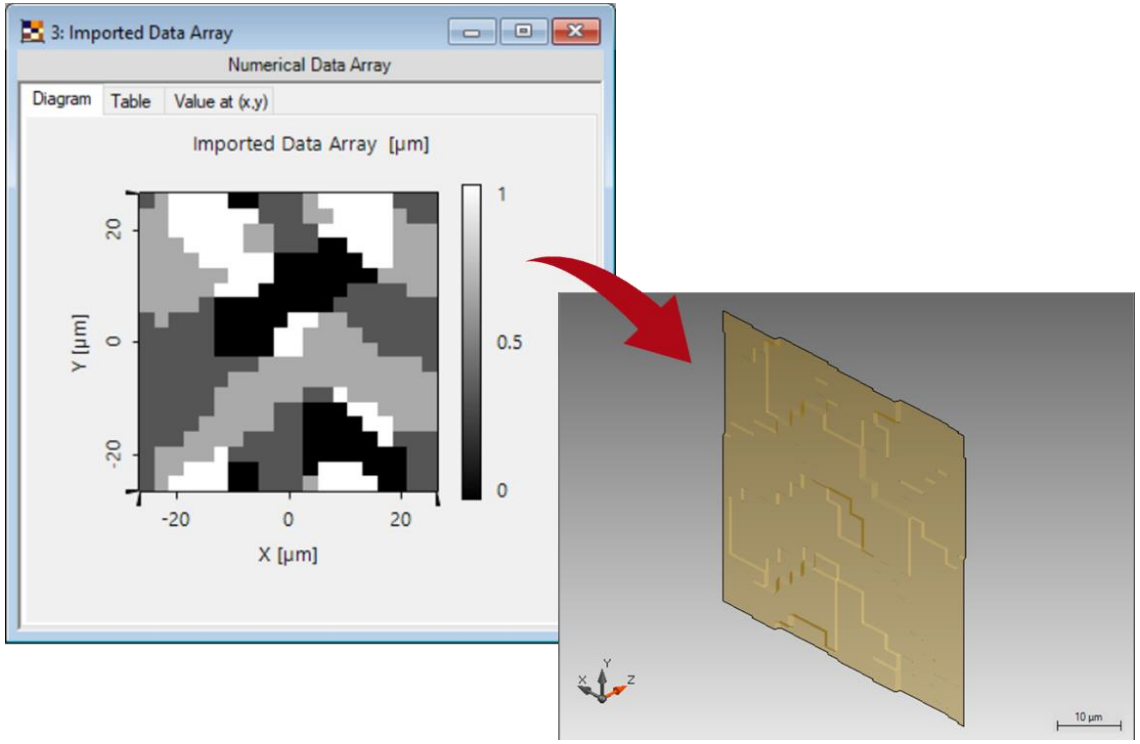
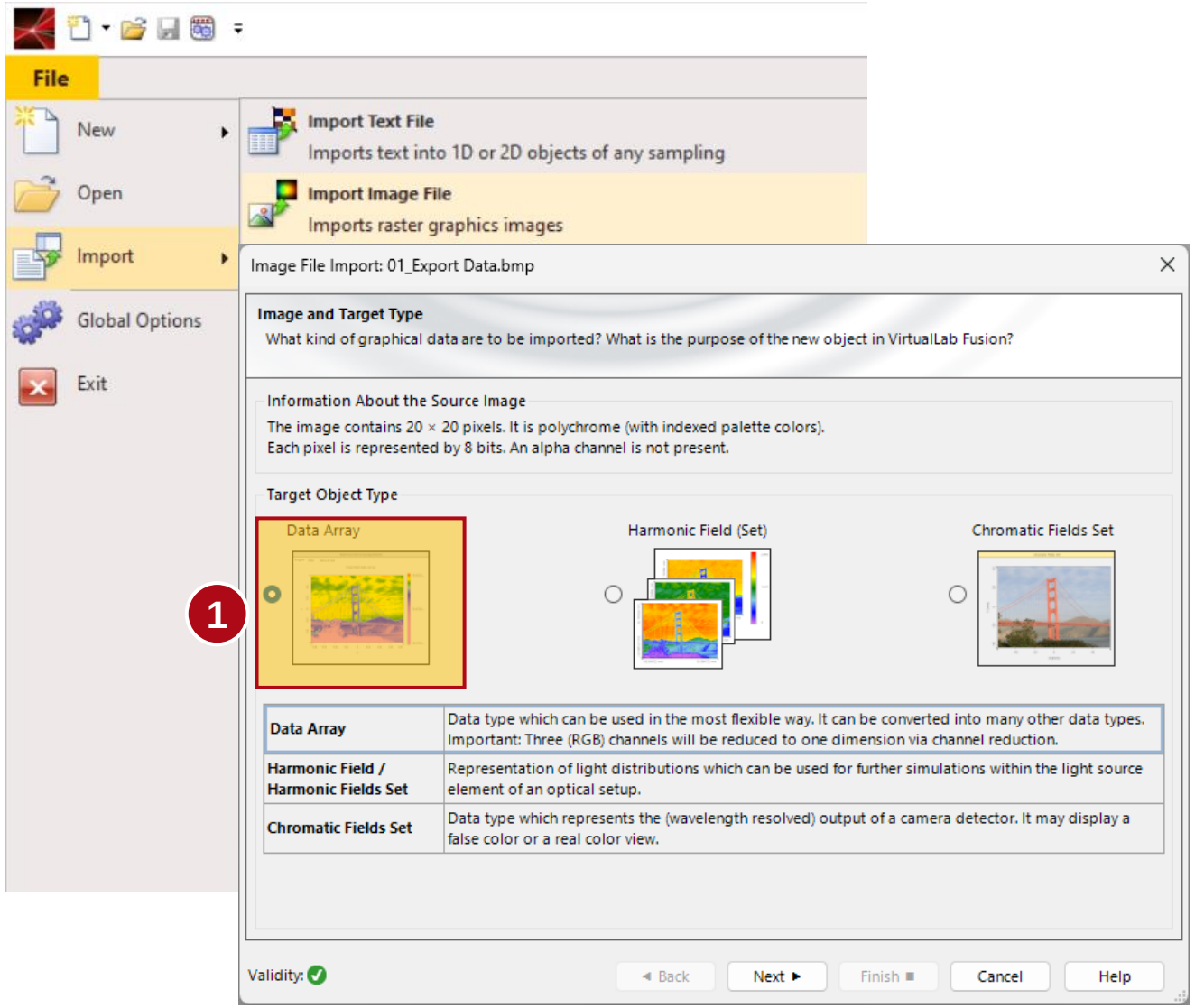
Import of Bitmap File Containing Height Data of a Microstructure into VirtualLab Fusion

Abstract



The comparison of modeling results and measurement data is of importance for any design process of optical elements. Hence, it is necessary to be able to import measured height profiles, e.g., of a microstructure, into the modeling software to evaluate the performance of the real element. Thus, in this document we demonstrate how height data can be imported by using a bitmap file.

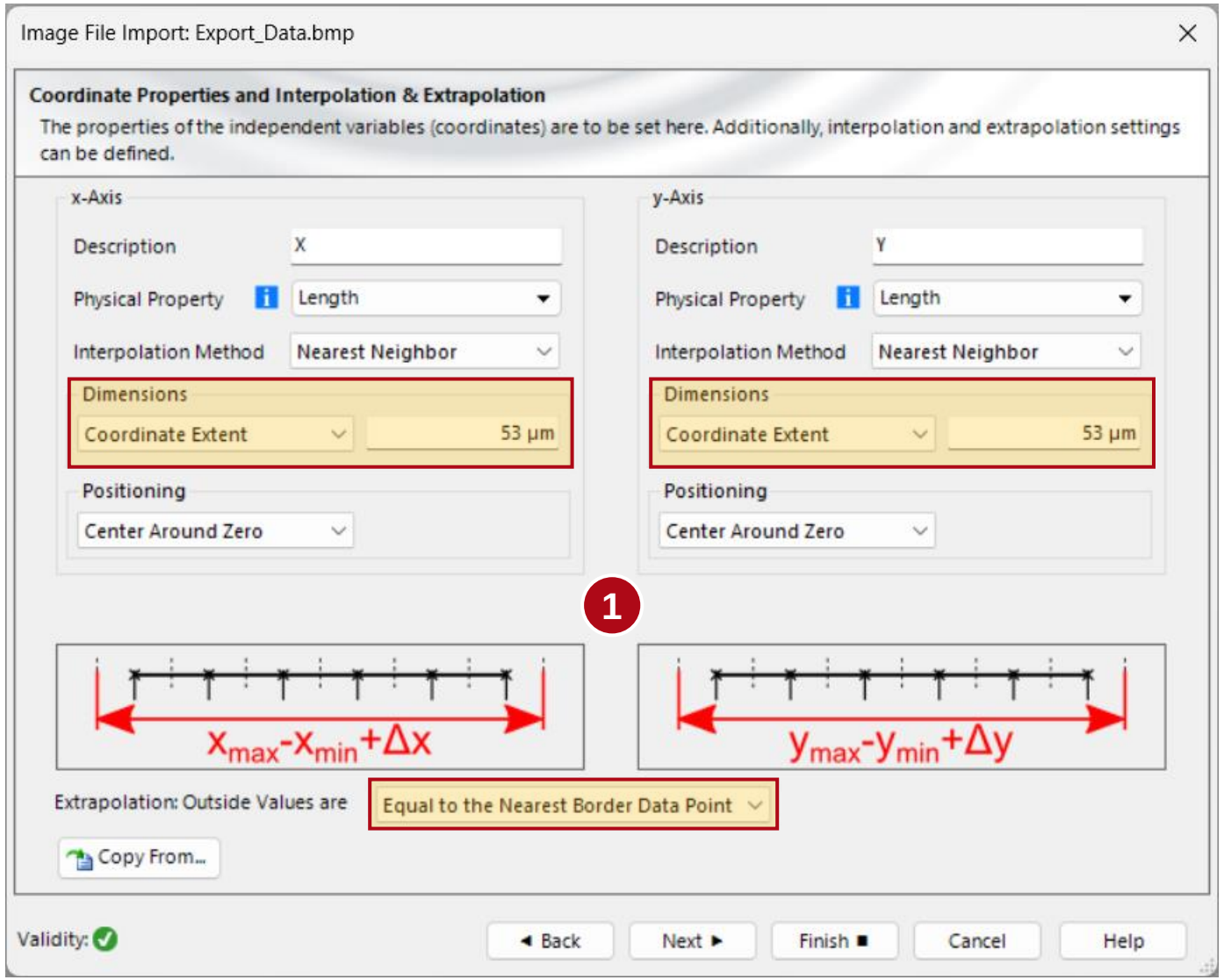
Instructions



Step 1

- Use the *Import* function to import the bitmap image file as *Data Array*.

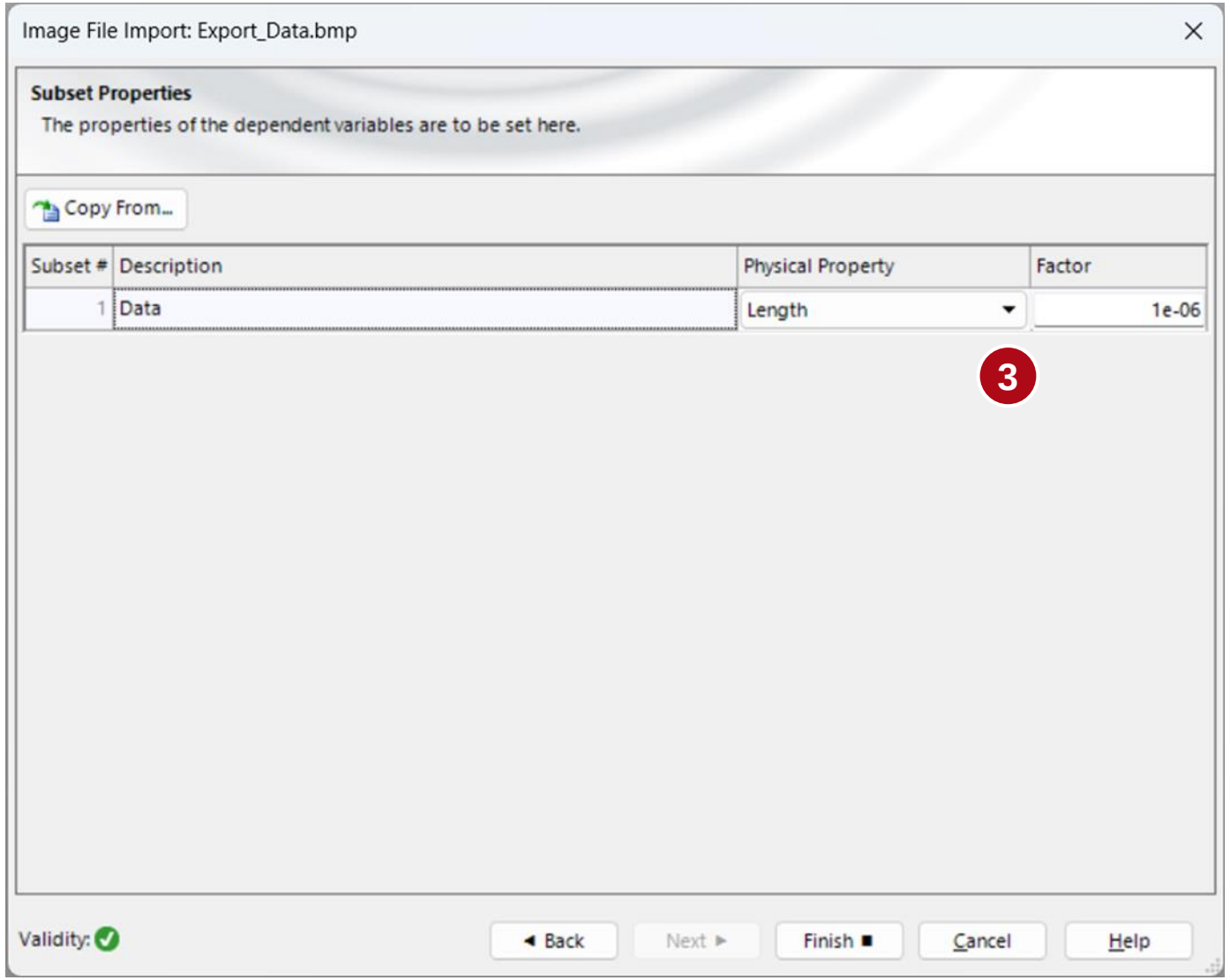
Instructions



Step 2

- Set coordinate, interpolation and extrapolation methods of the data array.

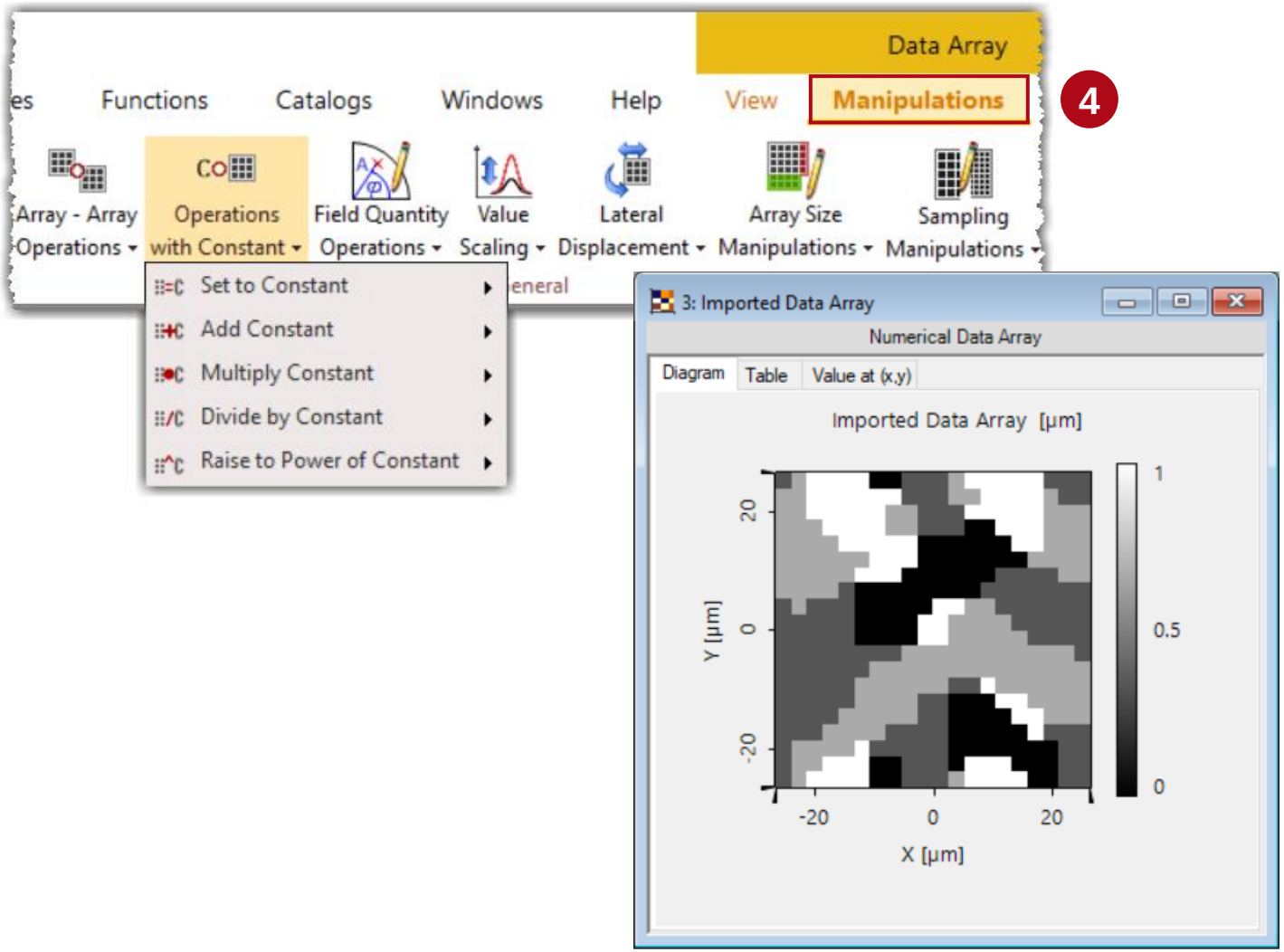
Instructions



Step 3

- Set the physical properties of the data array. Since the default unit of length is meters, make sure to specify a suitable factor to represent the height of a microstructure.

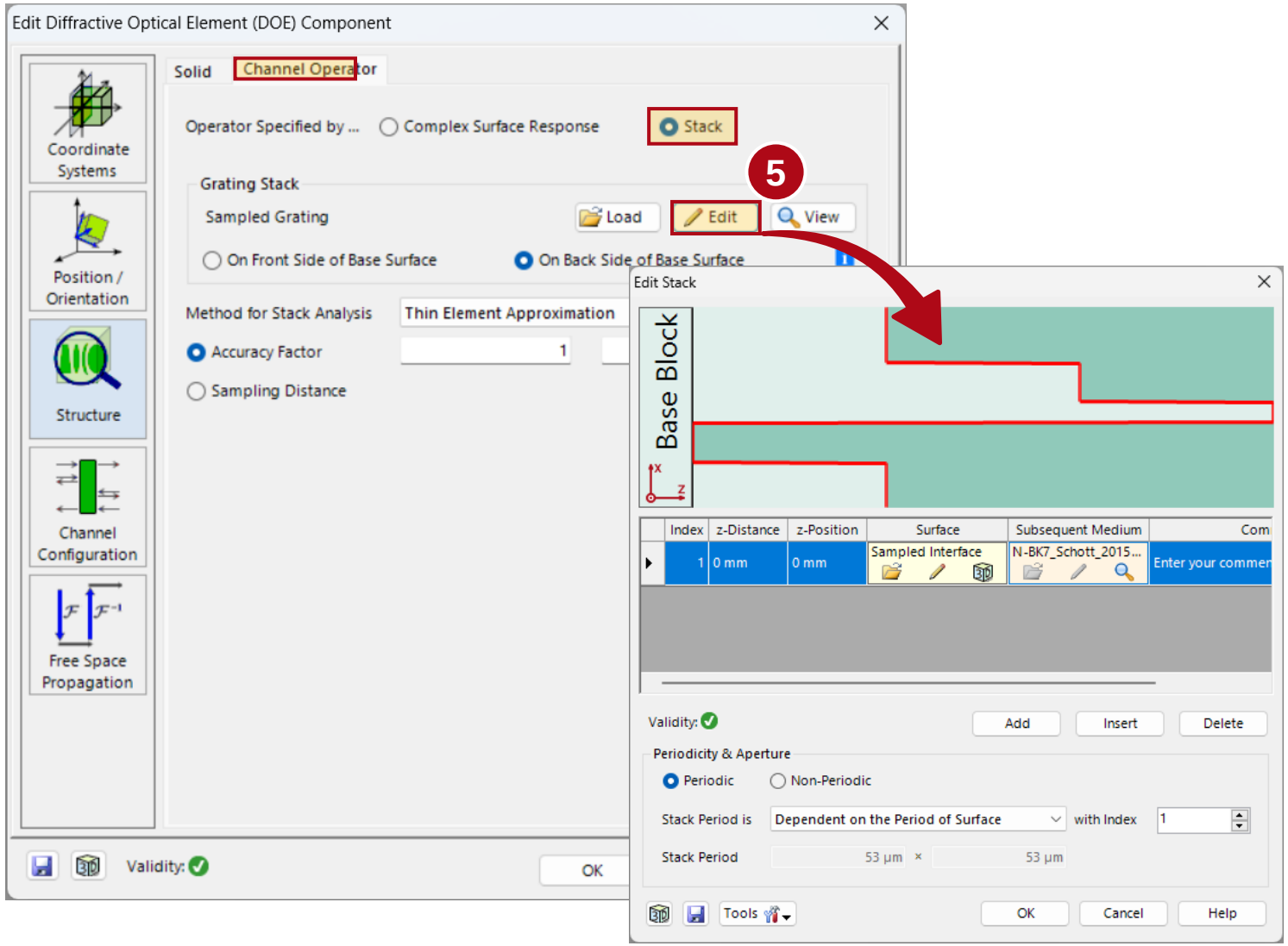
Instructions



Step 4

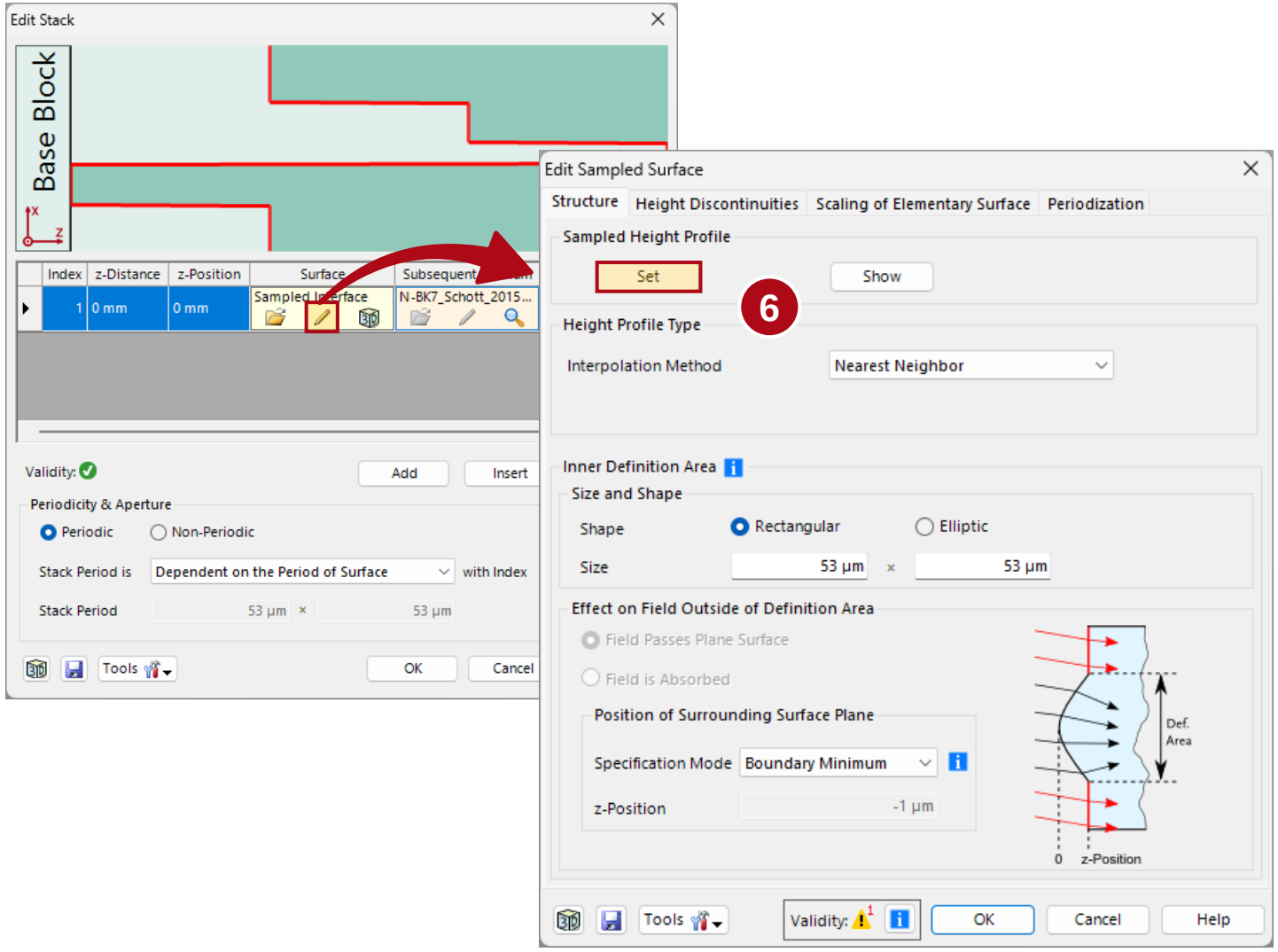
- Check the height value of the imported data array and adapt it via *Manipulation* menu (e.g., by applying a multiplication with constant).

Instructions



Step 5

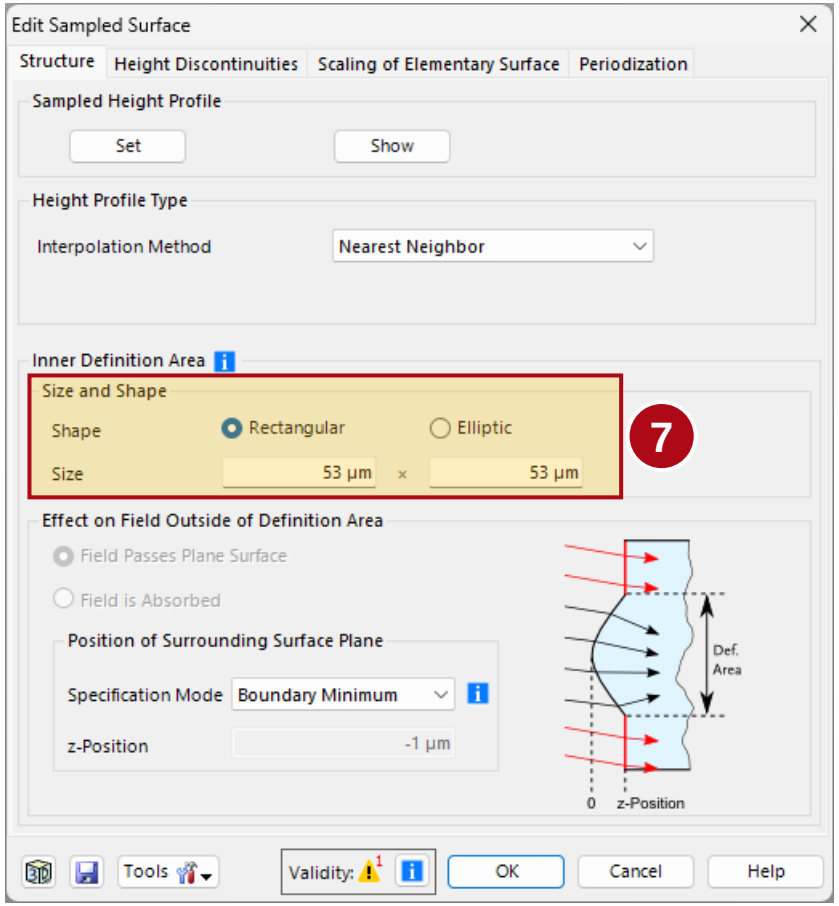
- Use *Microstructure* or *DOE Component* -> *Channel Operator* -> *Stack*



Step 6

- Load the imported data array to the sampled interface
- Keep the *Interpolation Method* to *Nearest Neighbor*

Instructions

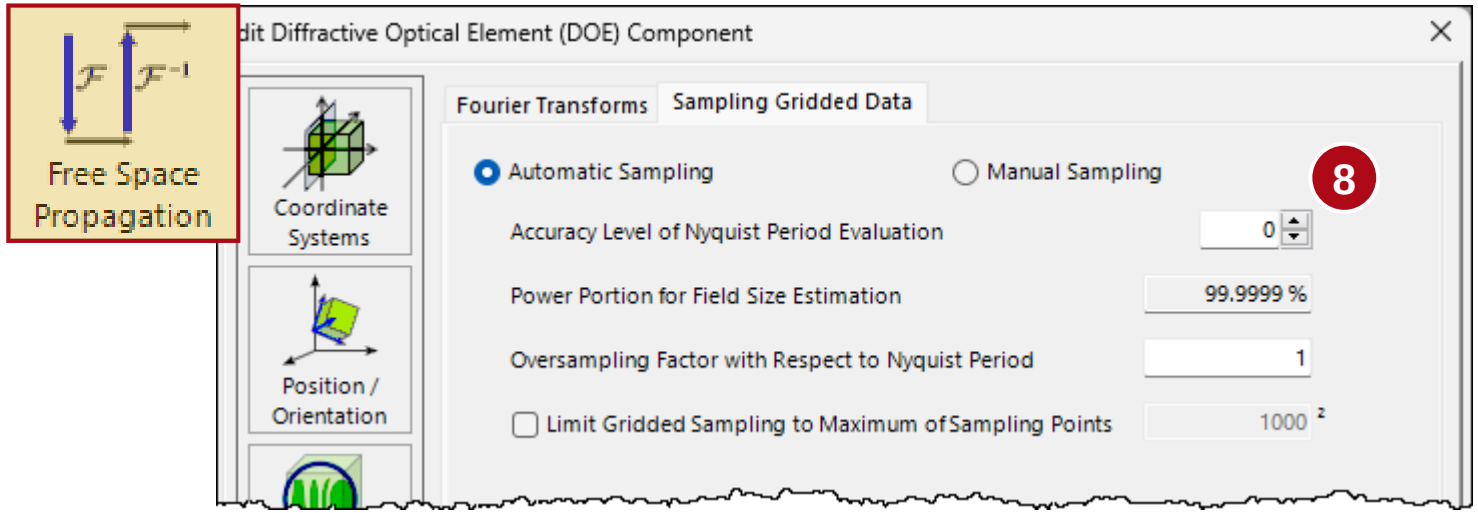


Step 7

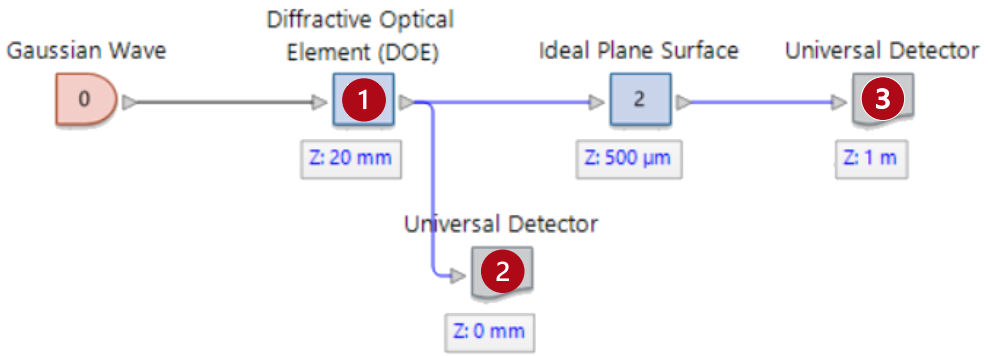
- Set extension of the stack to size of the DOE

Step 8

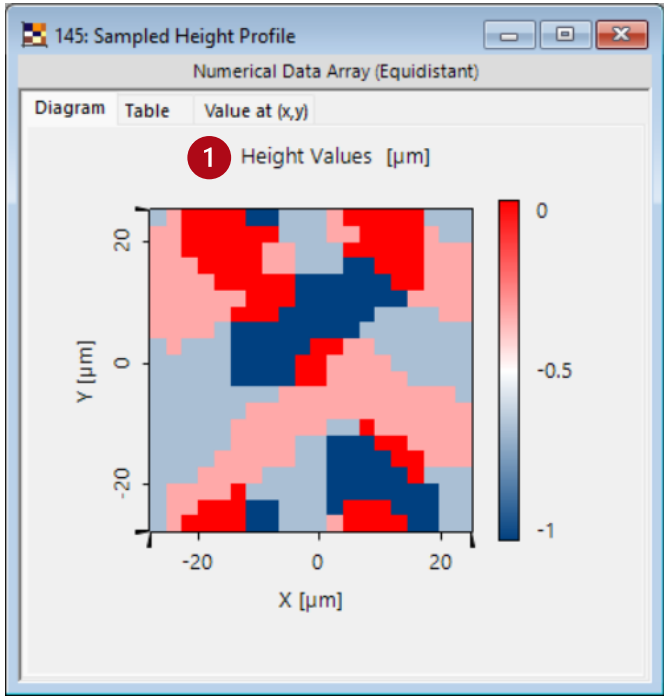
- Increase the sampling factor for the TEA algorithm if needed

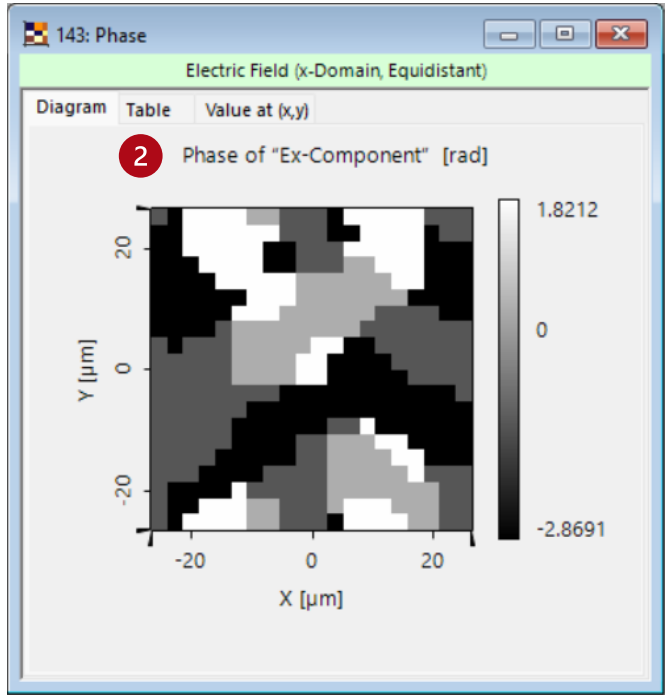


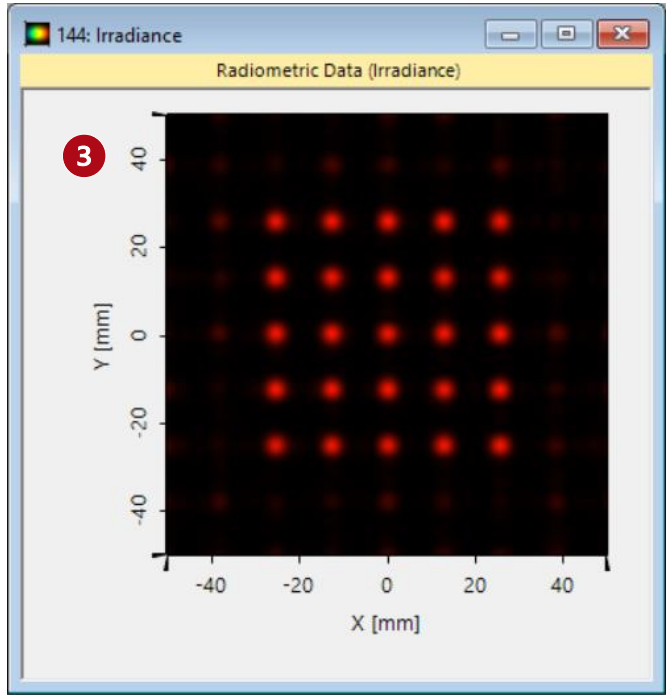
Diffractive Beam Splitter Created Using Imported DOE



We constructed a diffractive beam splitter using the imported DOE. The phase profile immediately after the DOE mirrors the height profile loaded from the DOE. From the far field picture, we can observe that the DOE functions as a 5×5 beam splitter. This can be further optimized by adjusting parameters such as the refractive index.







Document Information

title	Import of Bitmap file containing Height Data of a Microstructure into VirtualLab Fusion
document code	SWF.0006
document version	2.1
required packages	-
software version	2024.1 (Build 1.132)
category	Feature Use Case
further reading	- Import of Text Files into VirtualLab Fusion - Import Optical Systems from Zemax - Data Array Import with Saved Settings - Import of Images into VirtualLab Fusion