RO notes on experimental data in this folder: '/Users/rudolfo/Software/GitHub/BirTomo/data/2025\_04/SpiculeA Experim&Simulation/Experimental Data'

The volume data were prepared using the Mathematica Notebooks BirefrObjectForwardProjFeb2025.nb and BirefrObjectForwardProjApril2025.nb

Copied from Notes in the above Mathematica Notebook:

Using the light field data in folder SMS\_2024\_0611\_1248\_1, I created the retardance stack SMS\_2024\_0611\_1248\_1\_RetStack.tif that was further processed. The resolution along the Z-axis was increased from 6.75µm to 5µm, making the resolution isotropic. Some black Z-slices were added at top and bottom, bringing the overall dimensions {Z, Y, X} to {43, 128,128}. Furthermore, to reduce the measured retardance values to voxels that represent the spicule but not the tissue surrounding the spicule, the retardance data was thresholded by setting all retardance values below 8nm to zero. Finally, the stack of retardance data was converted to 8 bit and the resultant volume data are stored in SMS1248RetStackRectScaledThresh.tif. Further details can be gleaned from NotesOnImageData.docx residing with the original experimental data in /Users/rudolfo/LightFieldMicroscopy/Experiments/2024\_06\_11\_SUSpicule

The TIFF stack SMS1248RetStackRectScaledThresh.tif was used to create the HDF5 volume files in the folder '../Simulation Data'

The light field image Spicule1248April9\_RevX-h5\_April9BirTomoLFPolStack.tif simulated with BirTomo and volume data from Spicule1248April9\_RevX.h5 has 1776x1776 pixels or 111x111 microlenses. To get an equivalent experimental light field image, I cropped the full experimental light field stack SMS1248LFPolStackRect8Bit.tif, which has 2048x2048 pixels, down to 1776x1776 pixels, choosing a ROI for which the simulated LF image overlays the experimental one. Accordingly, the ROI position for the crop was x=172, y=122, w=1776, h=1776.