This Gui is for showing the excitation field of SILM, multiple functionalities are realized, including:

1. Simulate Field intensity (Z, angle)
2. Plot Field Intensity(Z, angle)
3. Plot Field Intesnity (Multi_Angle vs Z)
4. Calculate theoretical CRLB_z under predefined signal to background ratios and illumination angles.

See the images in the following pages to see how to call these functions.

Methods of running the code:

RUN “SiLM_Field.py”, and make sure the packages are installed.

Main packages include:

- Numpy,
- Matplotlib
- Scipy
- Numba
- PyQt5
- Pandas
- tqdm

1. Simulate Field intensity (Z, angle)

SiLM Field 0.99(c)2021-5 Nanoscale Mechanobiology Laboratory, Mechanobiology Institute, National University of Singapore

Utilities

gnuplot | Main plot only

Simulation

Excitation Field Simulation Parameters:

Max Angle(deg): 52.00

Interval(deg): 1.00

Z-ceiling (nm): 250.00

Z-interval (nm): 1.00

Simulate Field Intensity(Z, Angle)

Z (nm): 100.00

Plot Field Intensity@Z vs Angle

Angle (deg): 0.00

Plot Field Intensity@Angle vs Z

Plot Field Intensity@Z vs Angle (Wave)

Simulate Fluorophores@Multi-Z vs Angle

Multi-Angle (comma delimited): 12,34,48

Plot Field Intensity@Multi-Angle vs Z

Max Wavelength(nm): 700.00

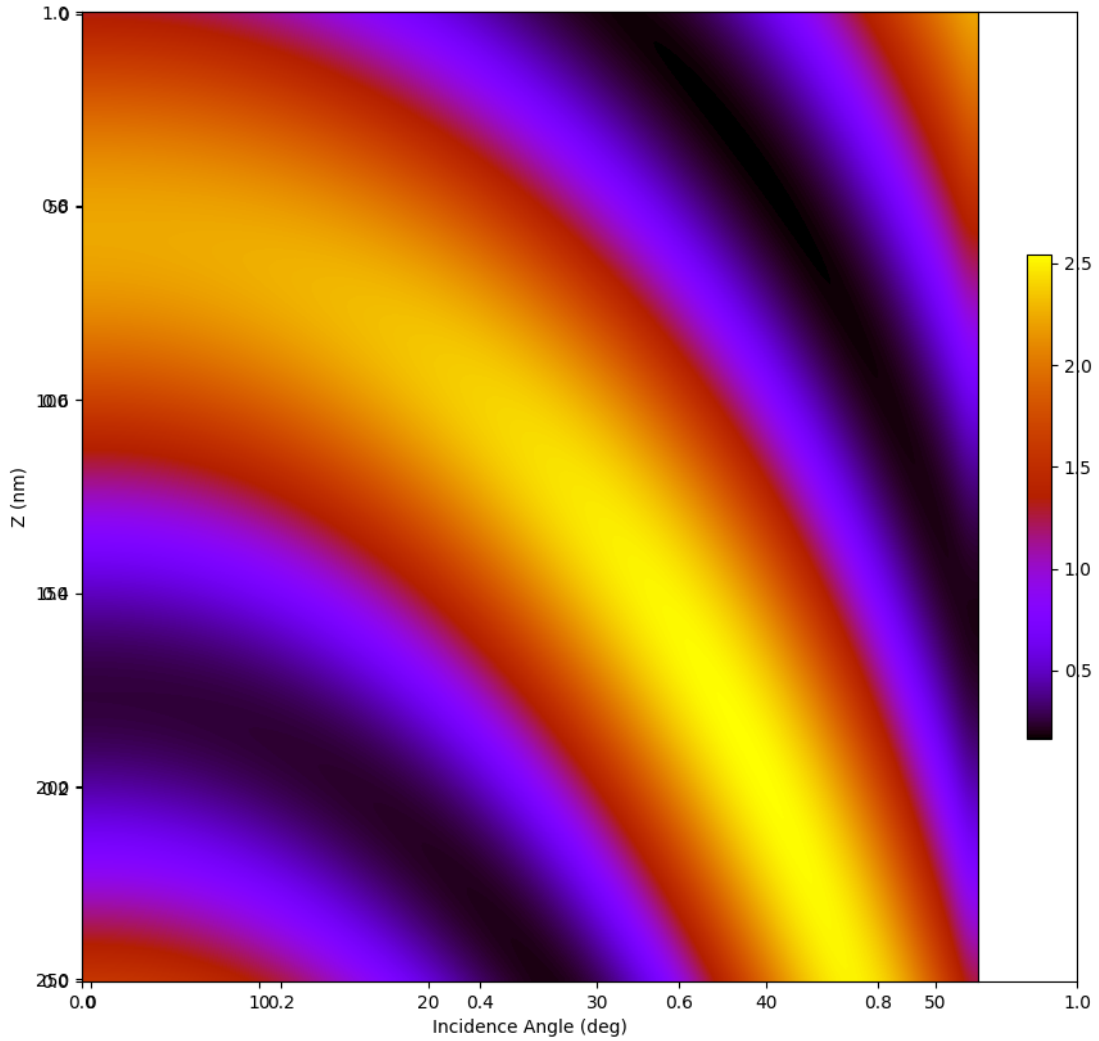
Wvlgth Int.(nm): 2.00

Min. Wavelength(nm): 450.00

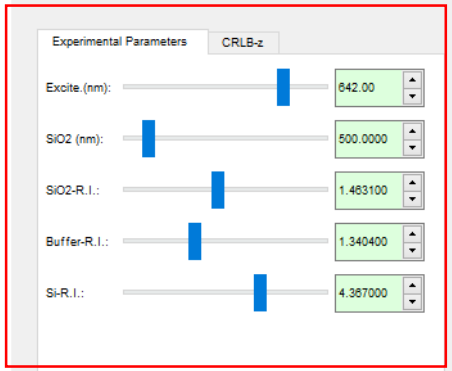
Simulate Field vs Z,A,Lambda

Clear Screen

Step 2: calculate the field intensity

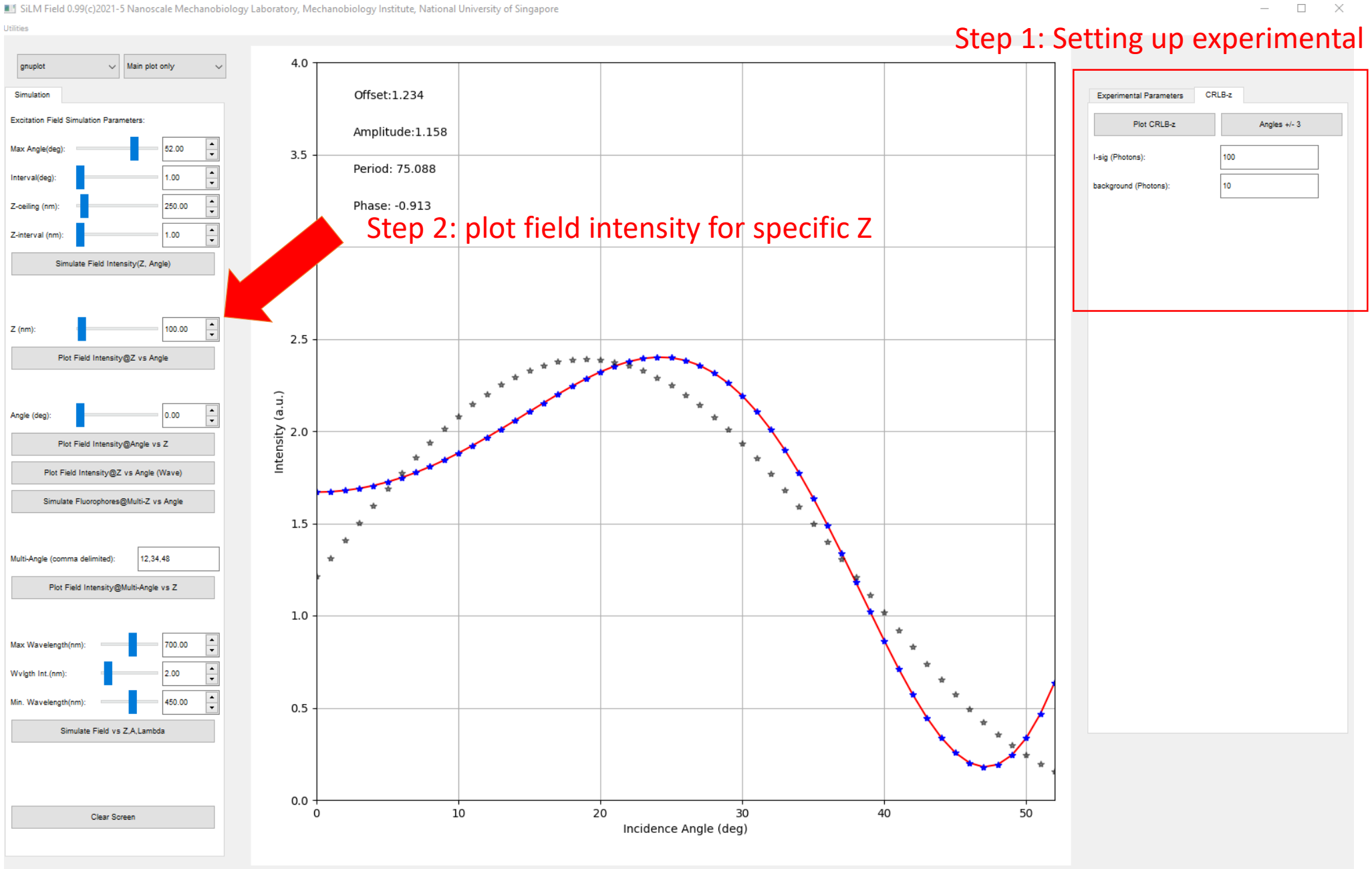


Step 1: Setting up experimental parameter



Wavelength
SiO2 thickness
SiO2 refractive index
Buffer refractive index
Si refractive index

2. Plot Field Intensity(Z, angle)



3. Plot Field Intesnity (Multi_Angle vs Z)

4. Calculate theoretical CRLB_z under predefined Signal to background ratios.