

Ring Resonator

By: Leonardo Pessoa

OBJECTIVES

- Recreate and optimize Lumerical guide.
- Create an Halfring with obtain results.
- Create an .GDS circuit with the results.

THEORETICAL RESULTS

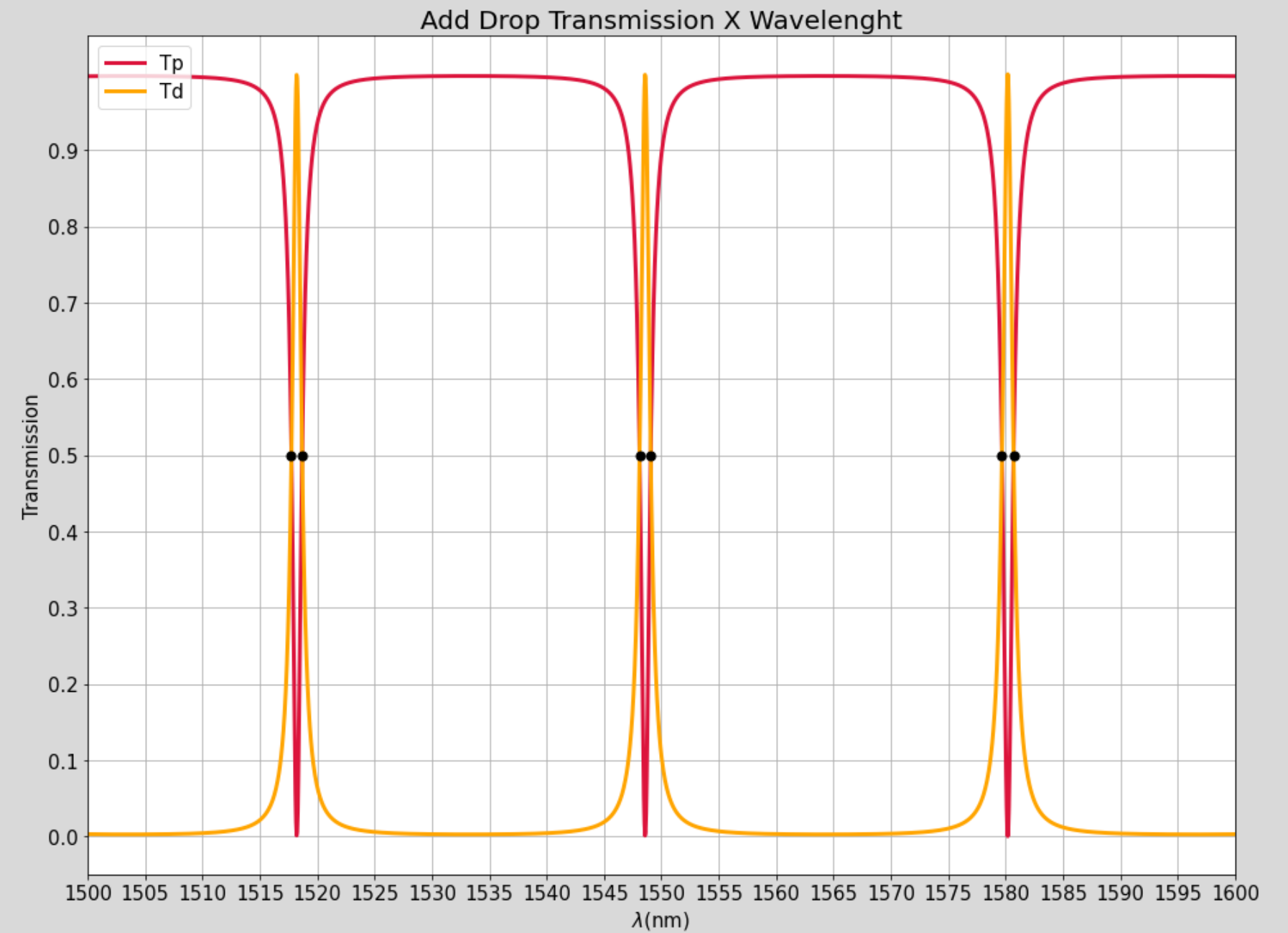
FWHM = 0.8 nm

Fsr = 25.6 nm

Q = 1630.72

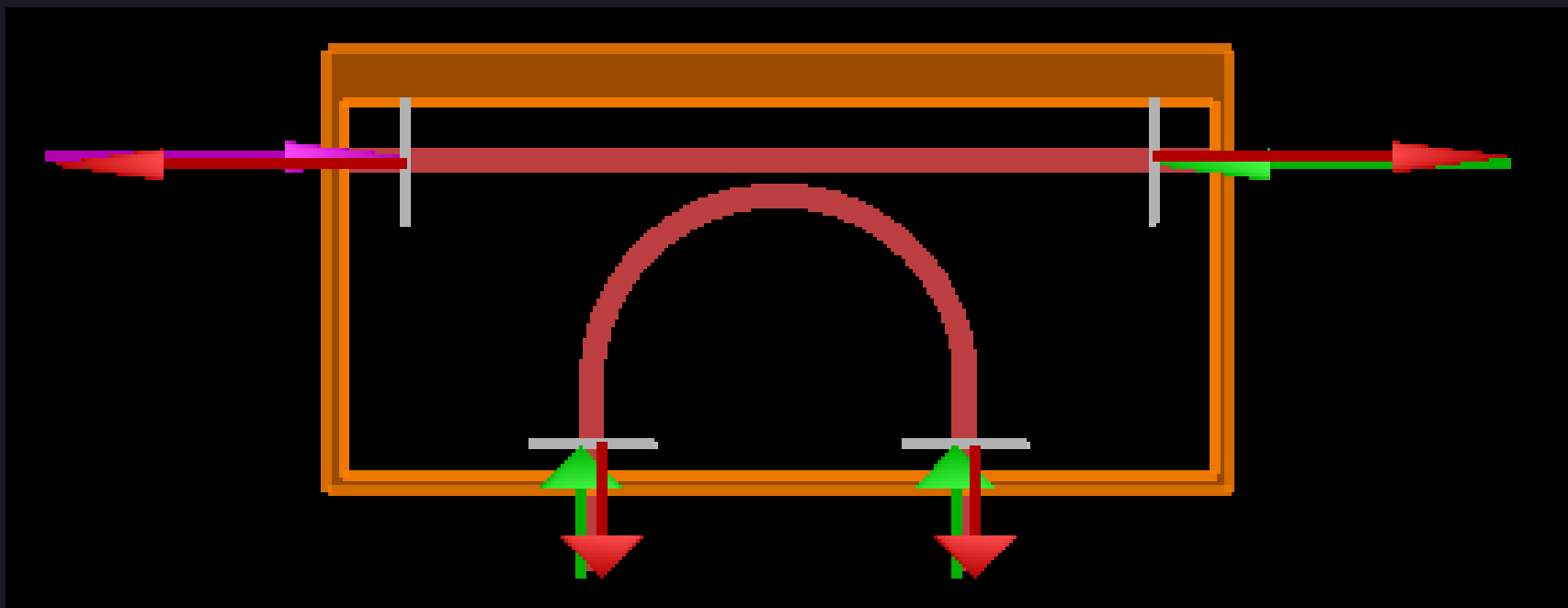
Finesse = 31.95

$K^2 = 0.0936$

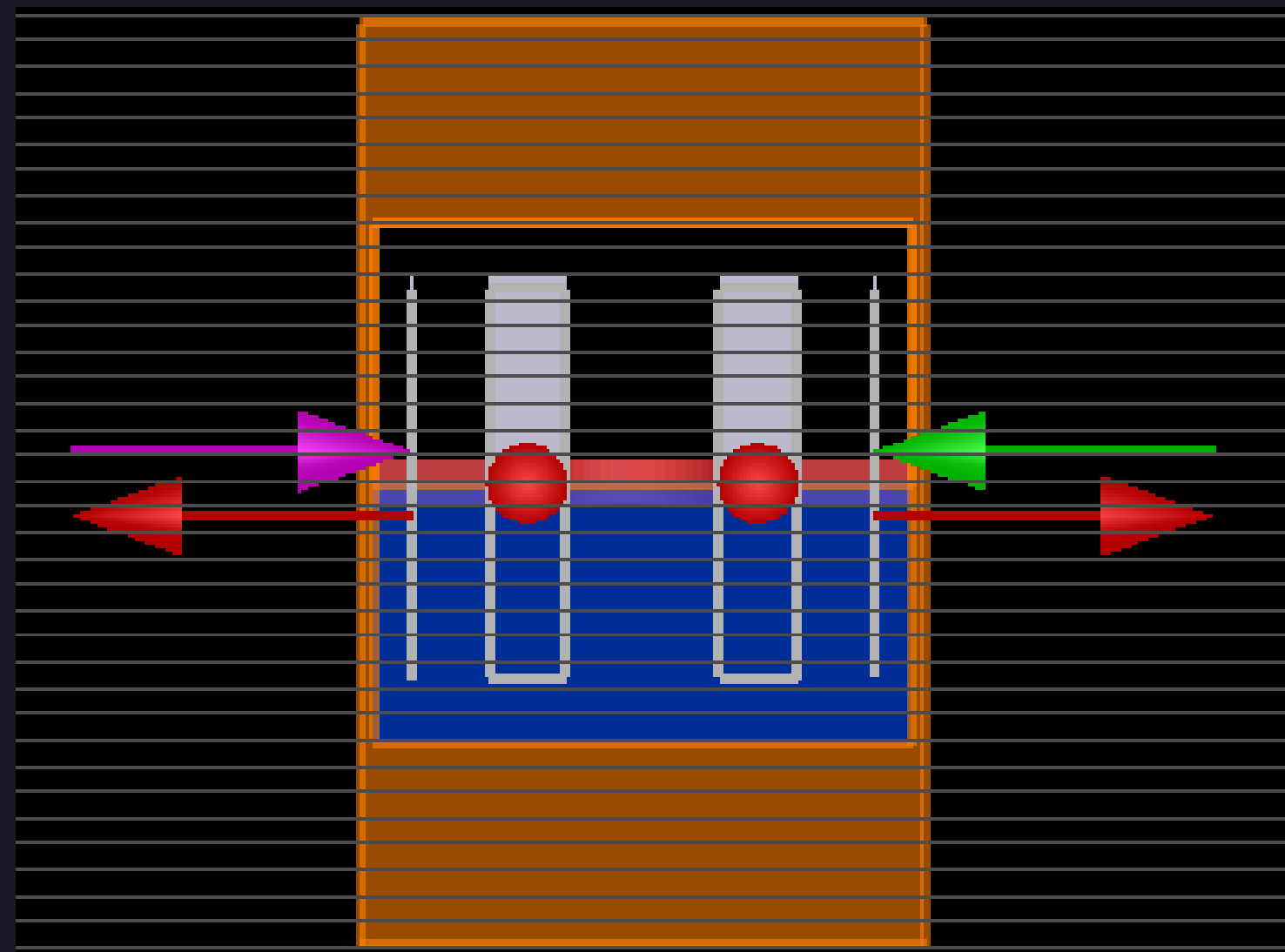


FDTD HALFRING

XY

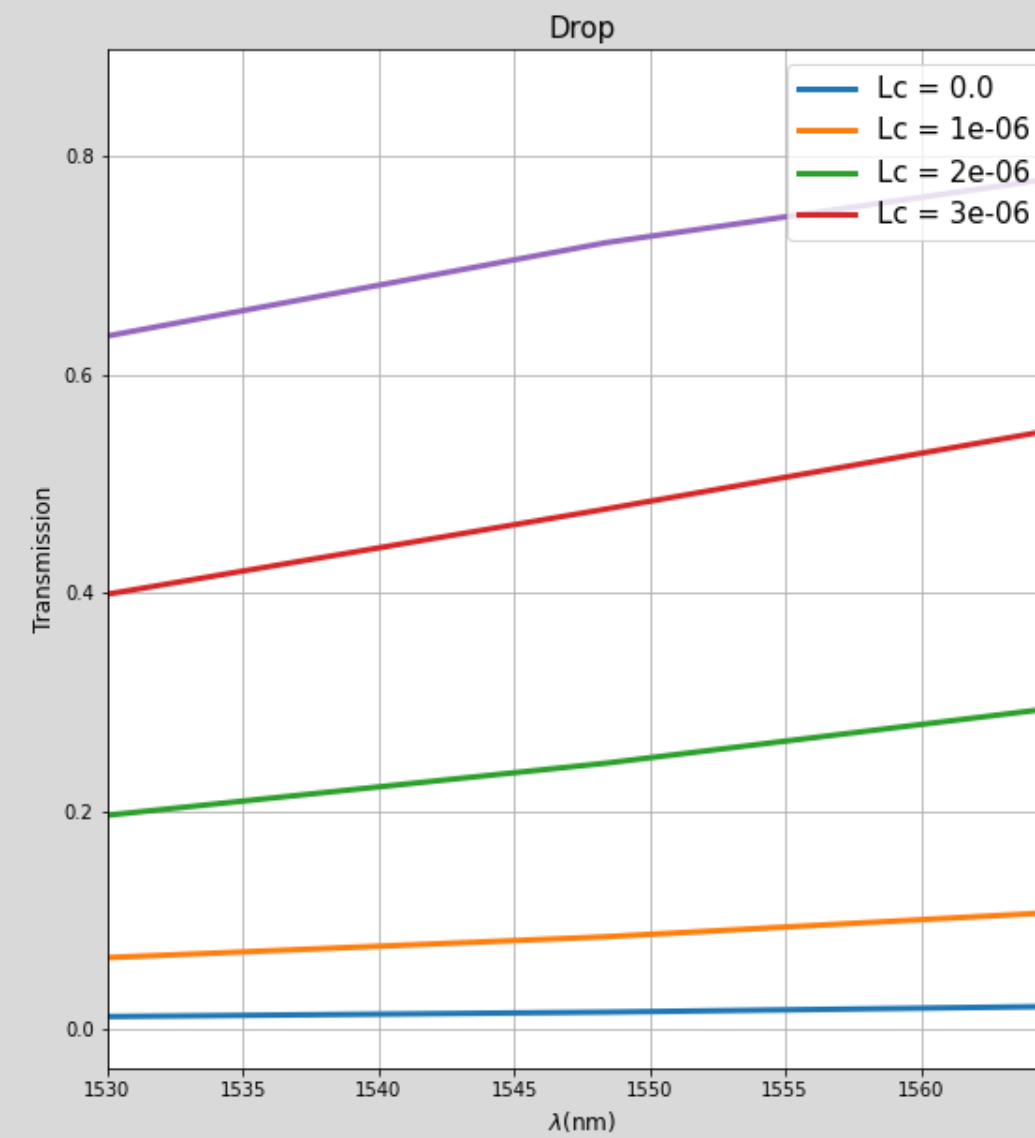
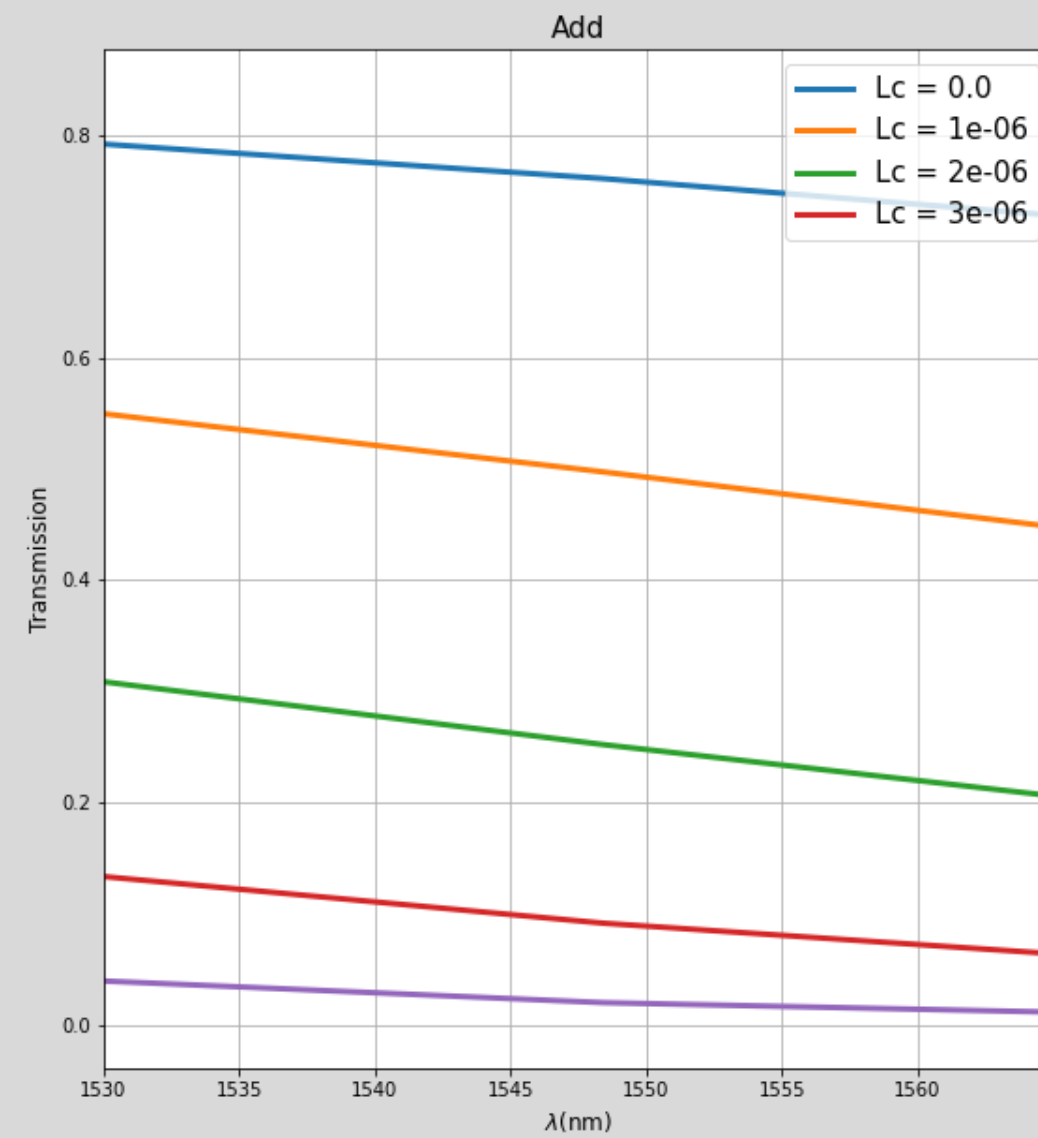


XZ



LC SWEEPS

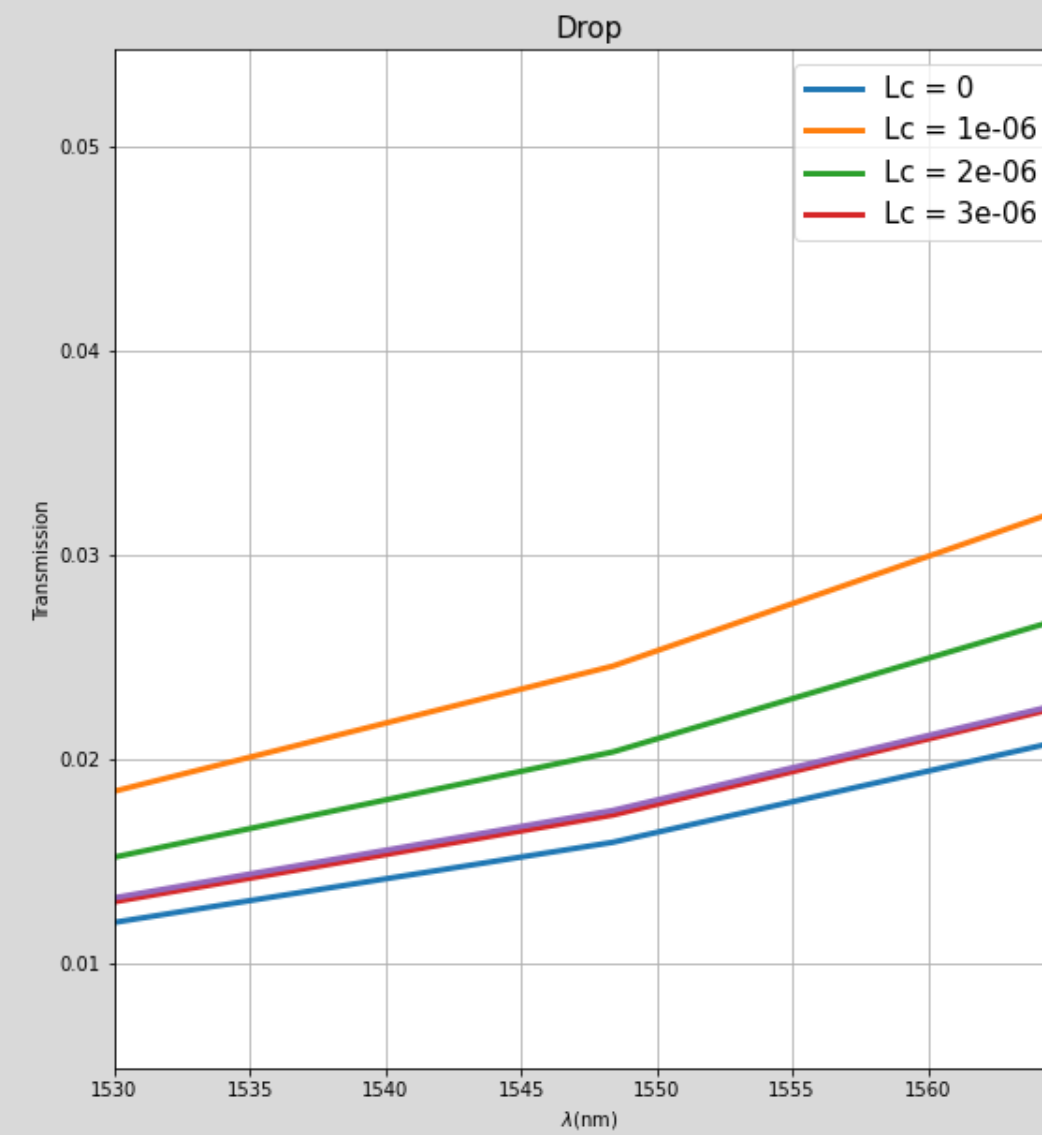
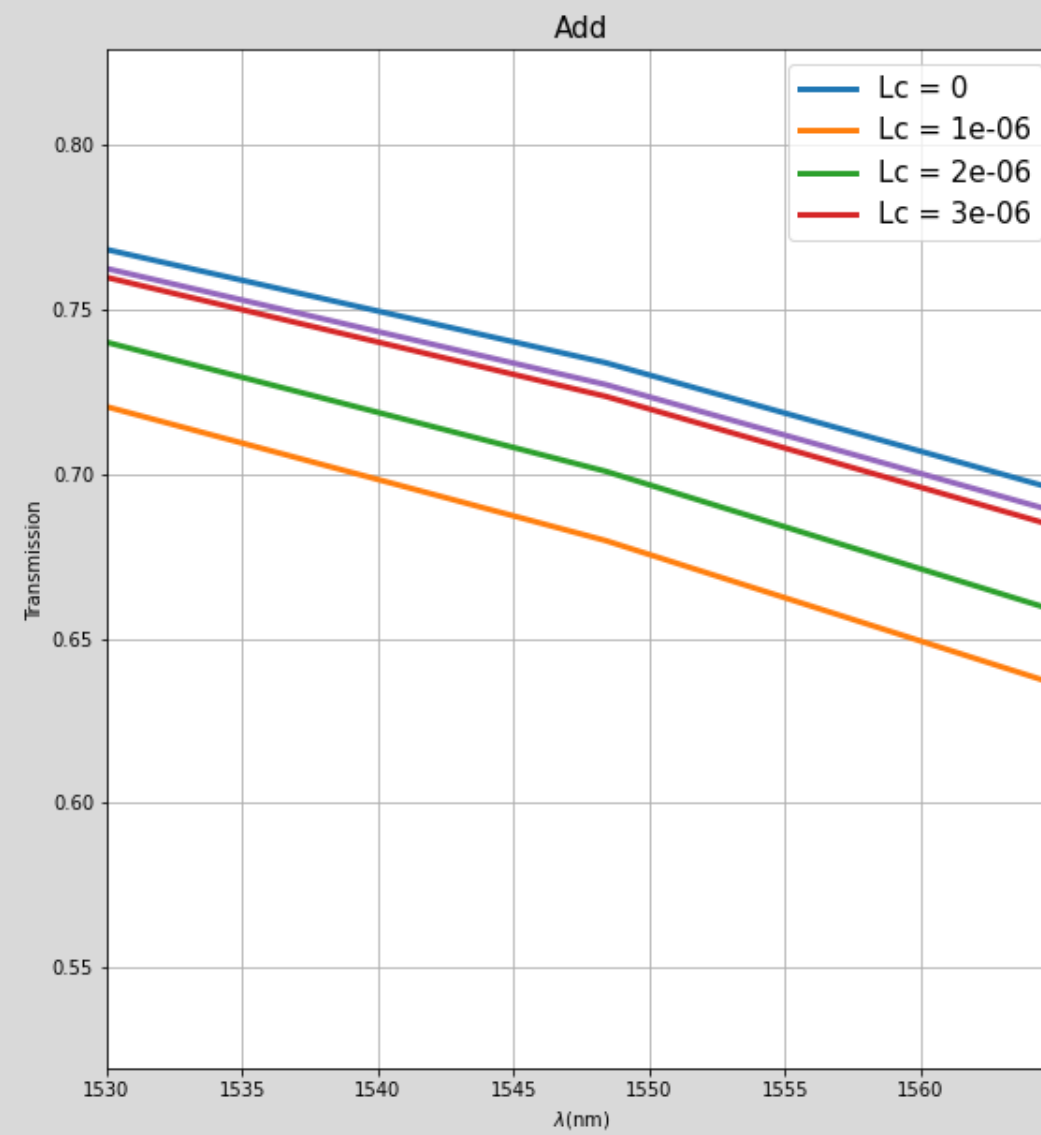
Lc Sweep (straight waveguide)



BEND

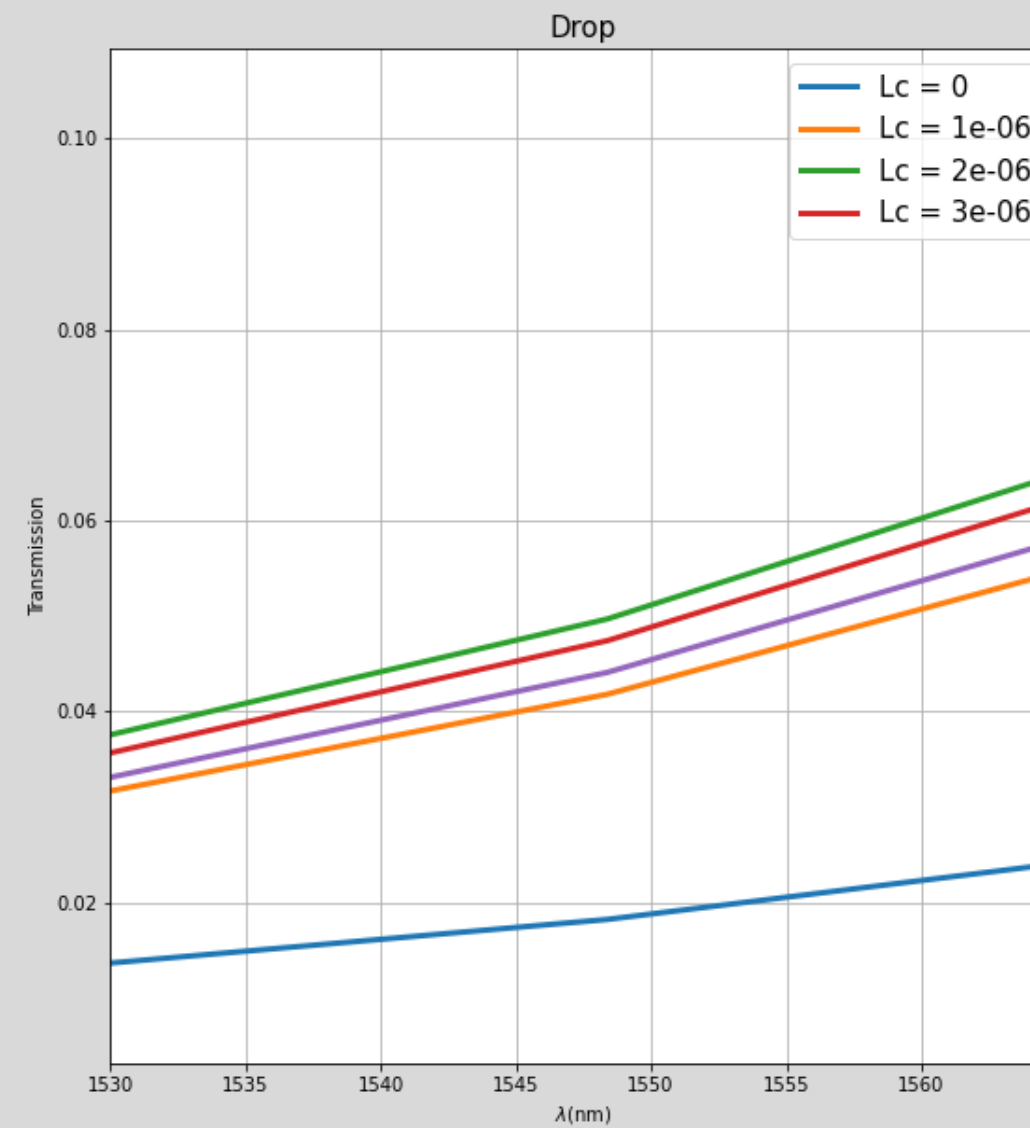
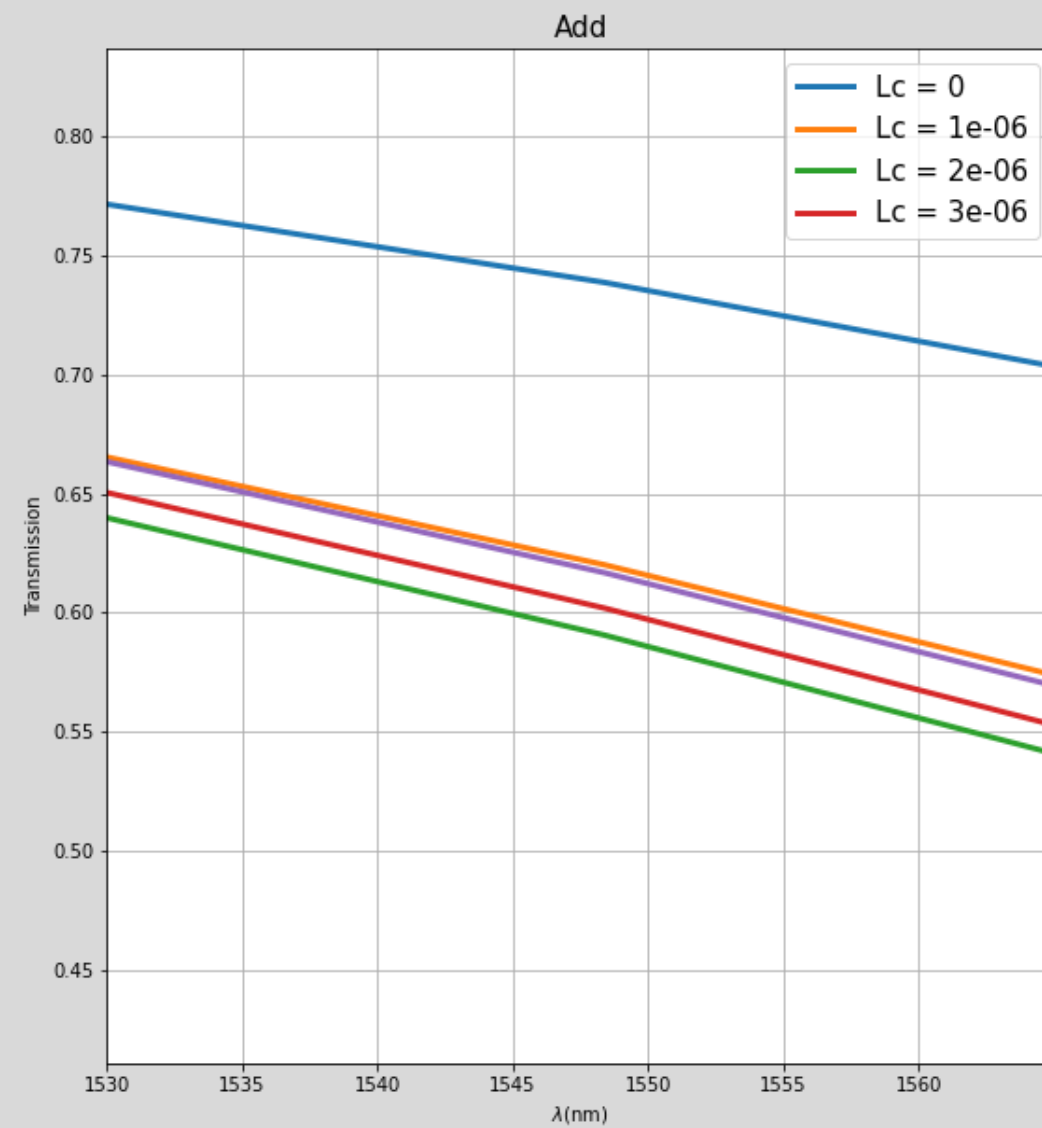
WAVEGUIDES

Lc Sweep (3 μ m bend waveguide)



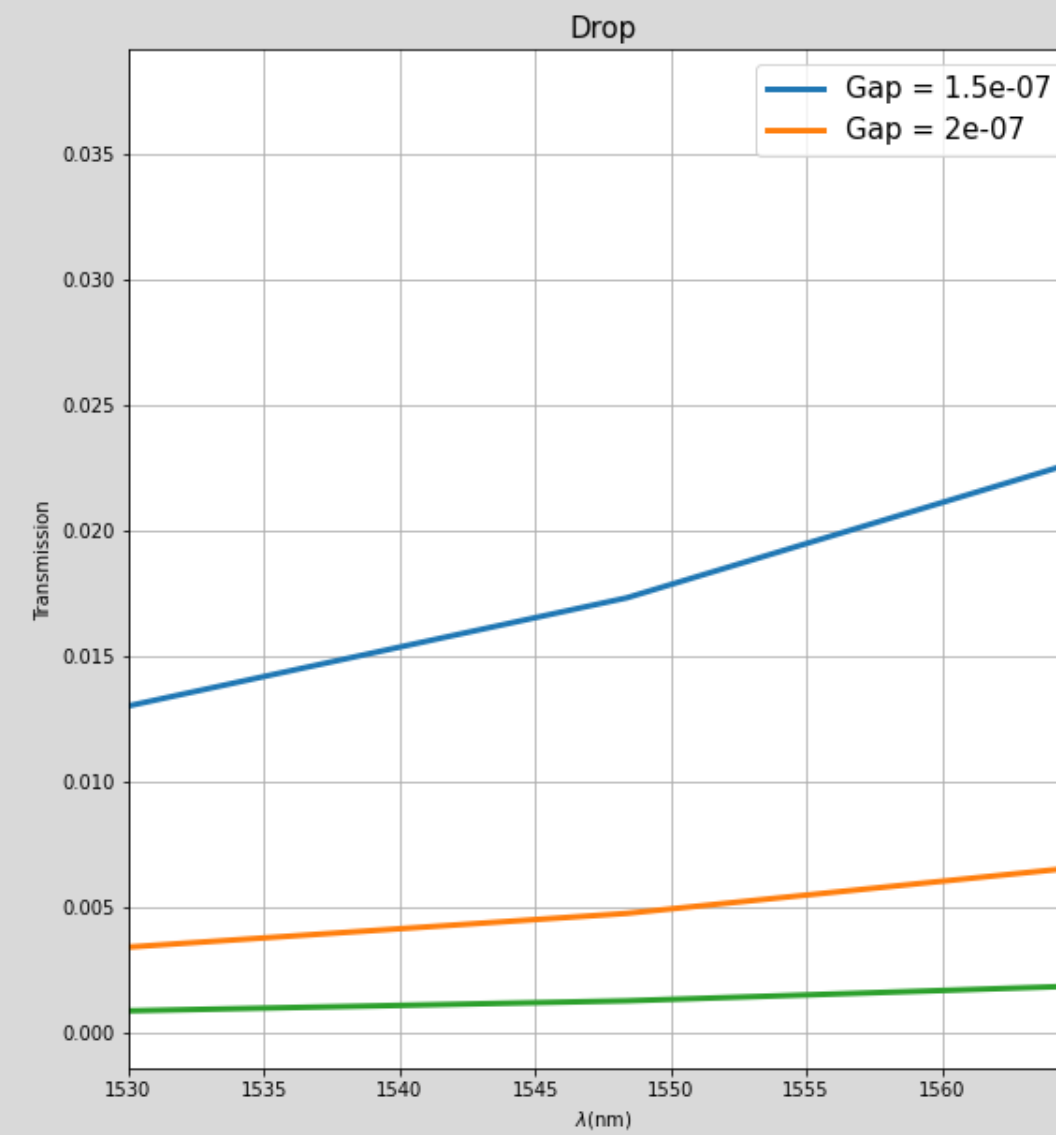
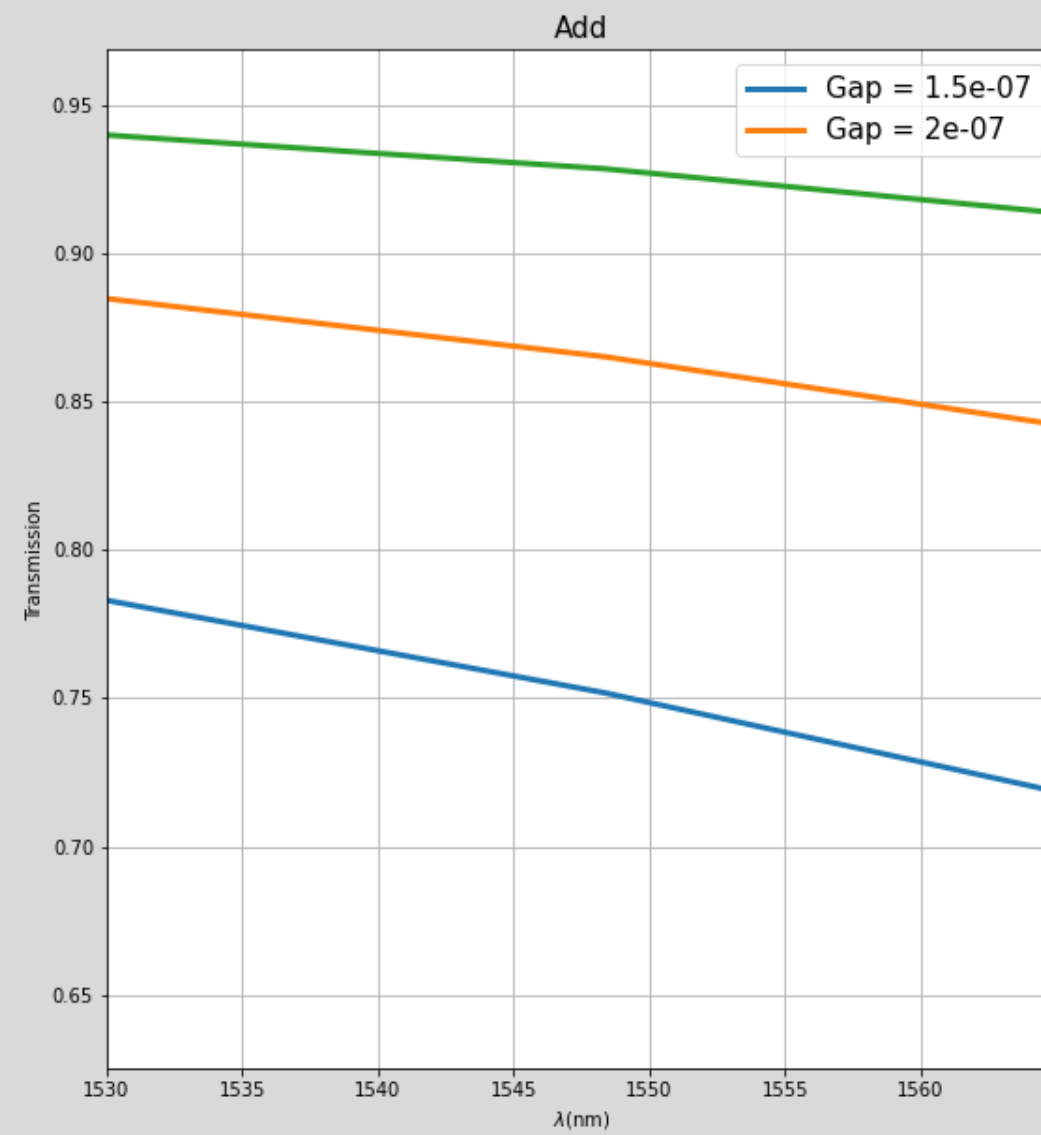
BEND WAVEGUIDES

Lc Sweep (5 μ m bend waveguide)



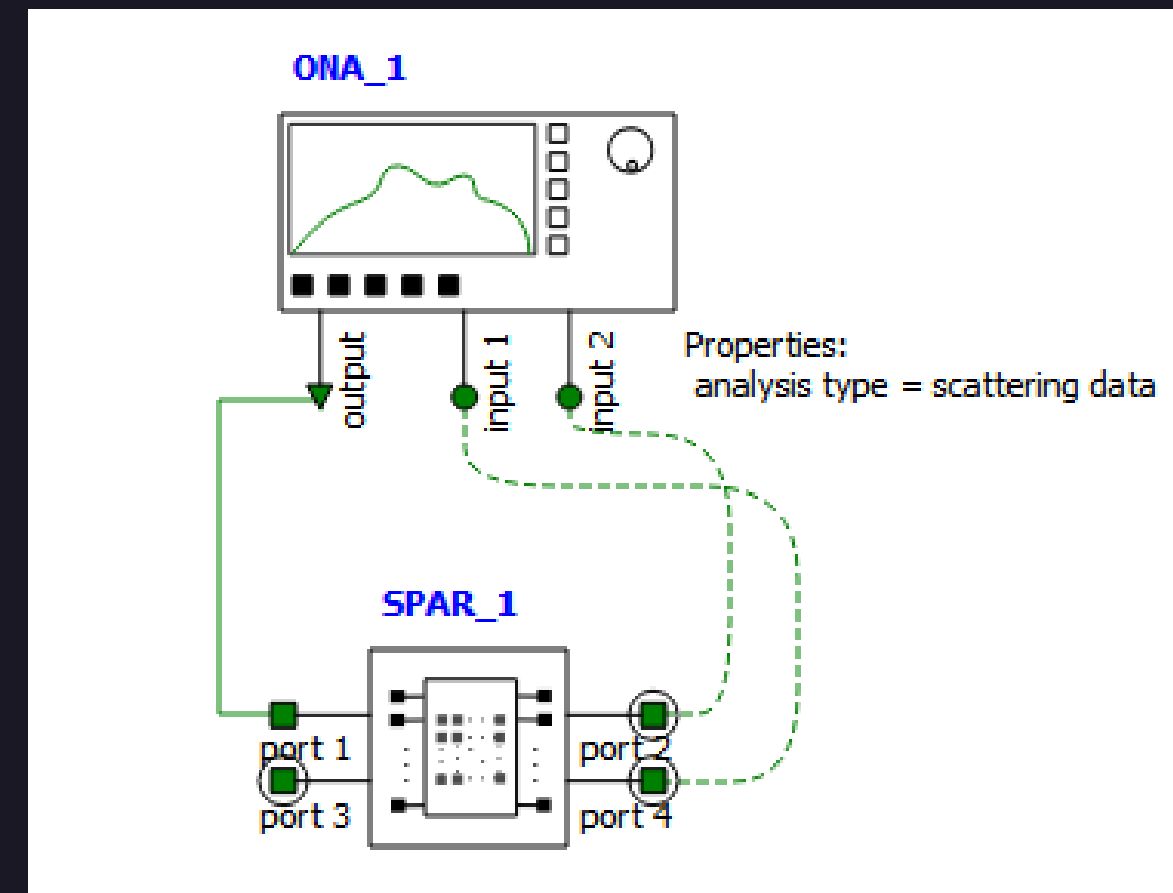
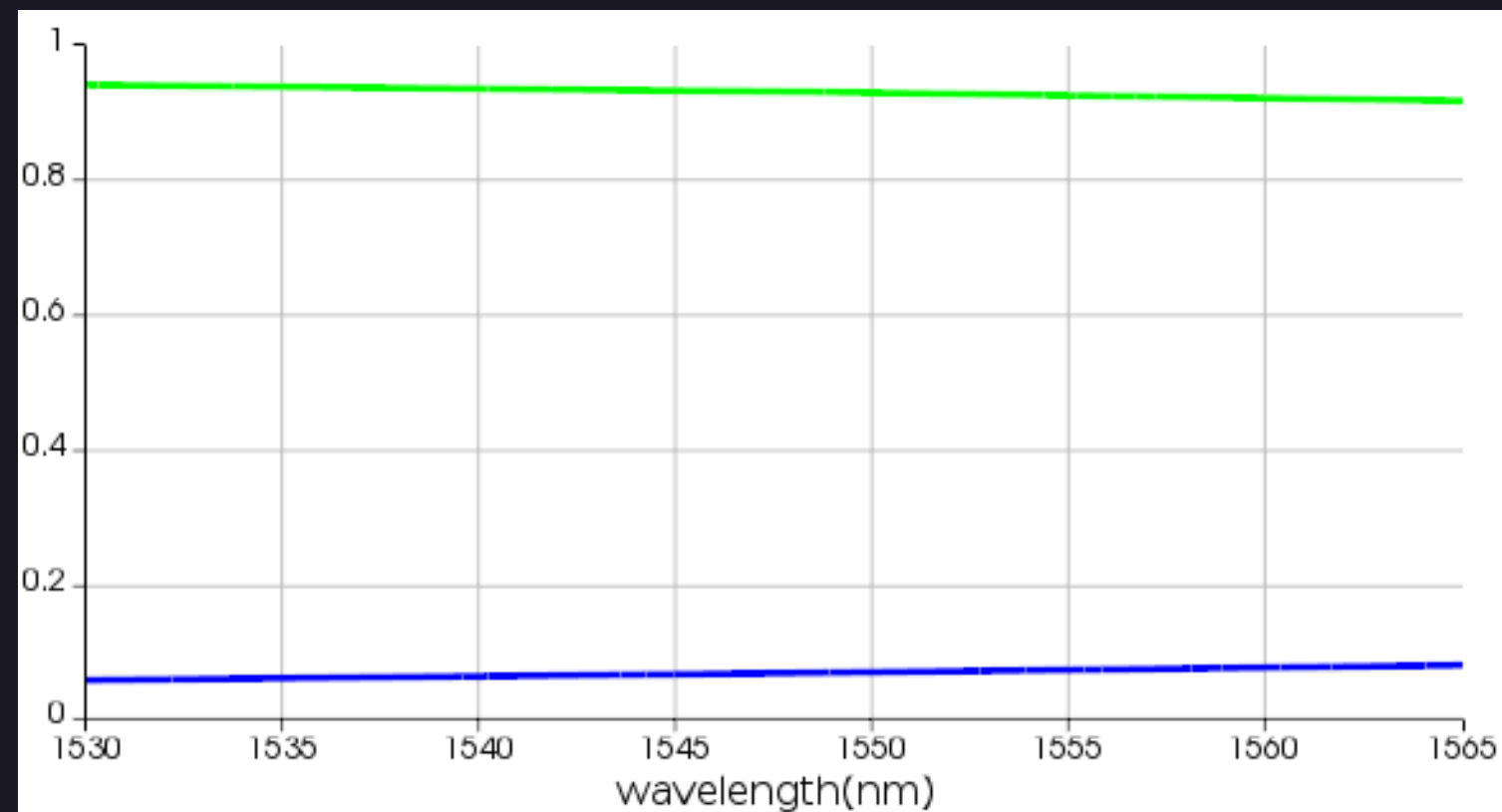
GAP SWEEP

Gap Sweep



Export Results

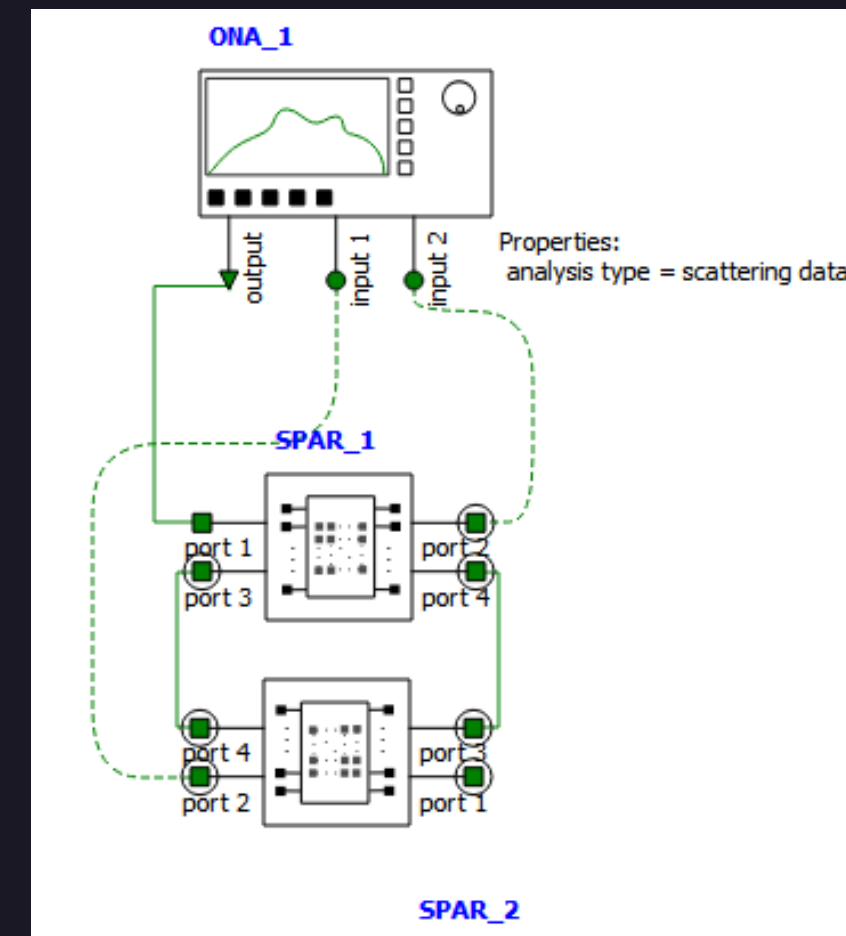
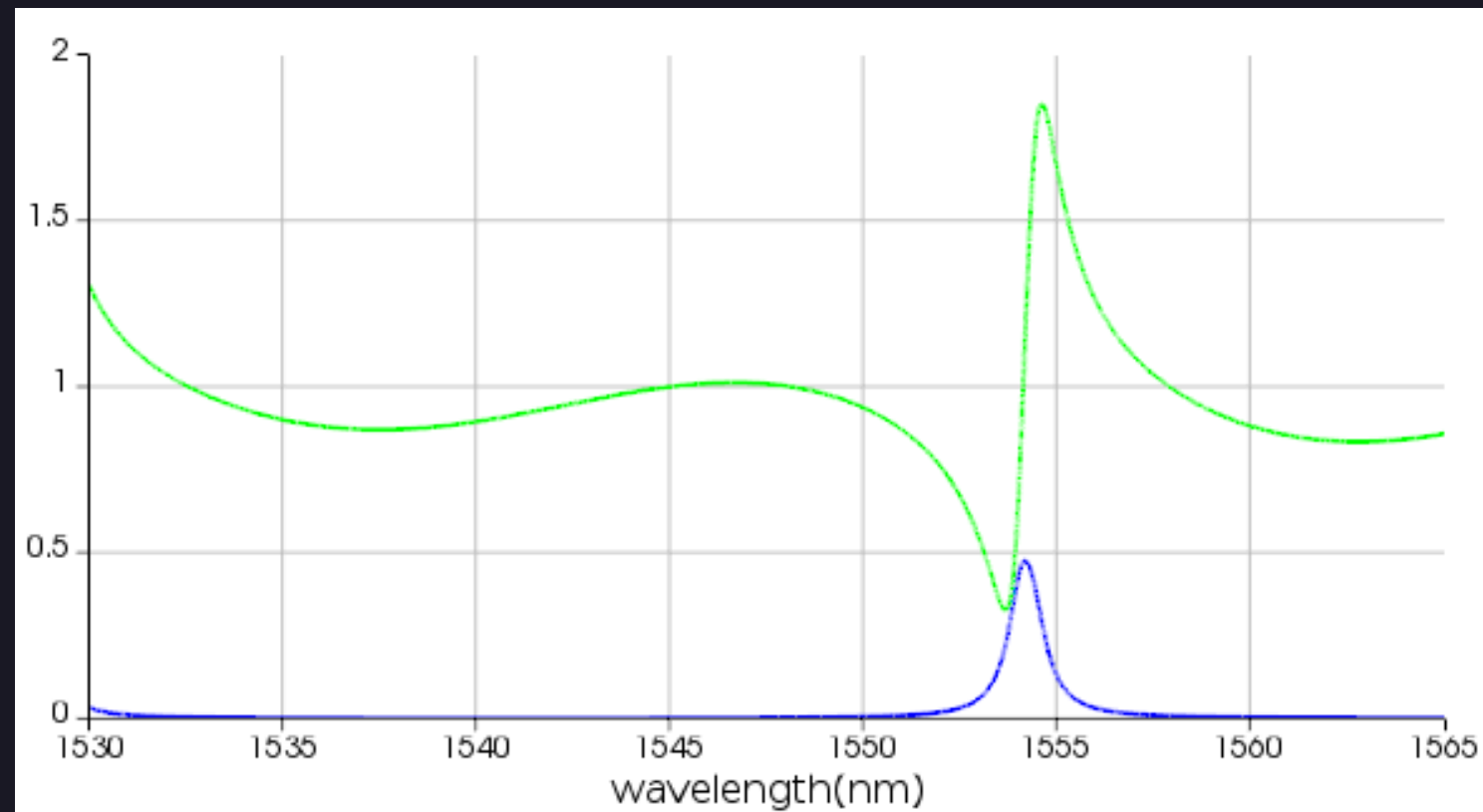
Gap = 150nm $L_c = 0$ nm



HALFRING

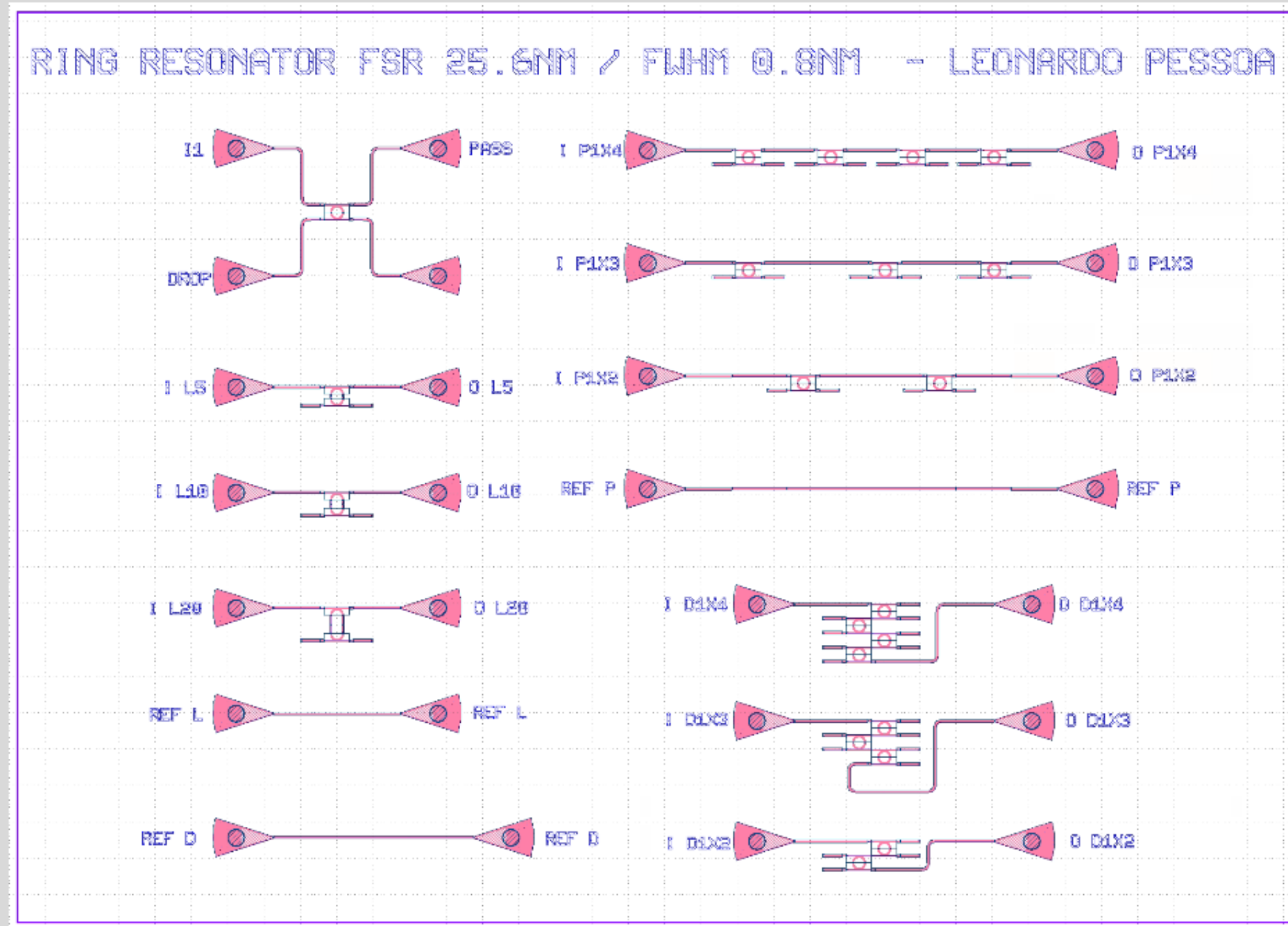
Export Results

Gap = 150nm Lc = 0nm



RING

KLAYOUT CIRCUIT



CONCLUSION

Interconnect Values:

$\text{FWHM} = 0.9\text{nm}$

$\text{FSR} = 25.5\text{nm}$

$Q = 1548.6$

$\text{Finesse} = 25.8$

Unexpected result
in the Interconnect
Ring Transmission.