

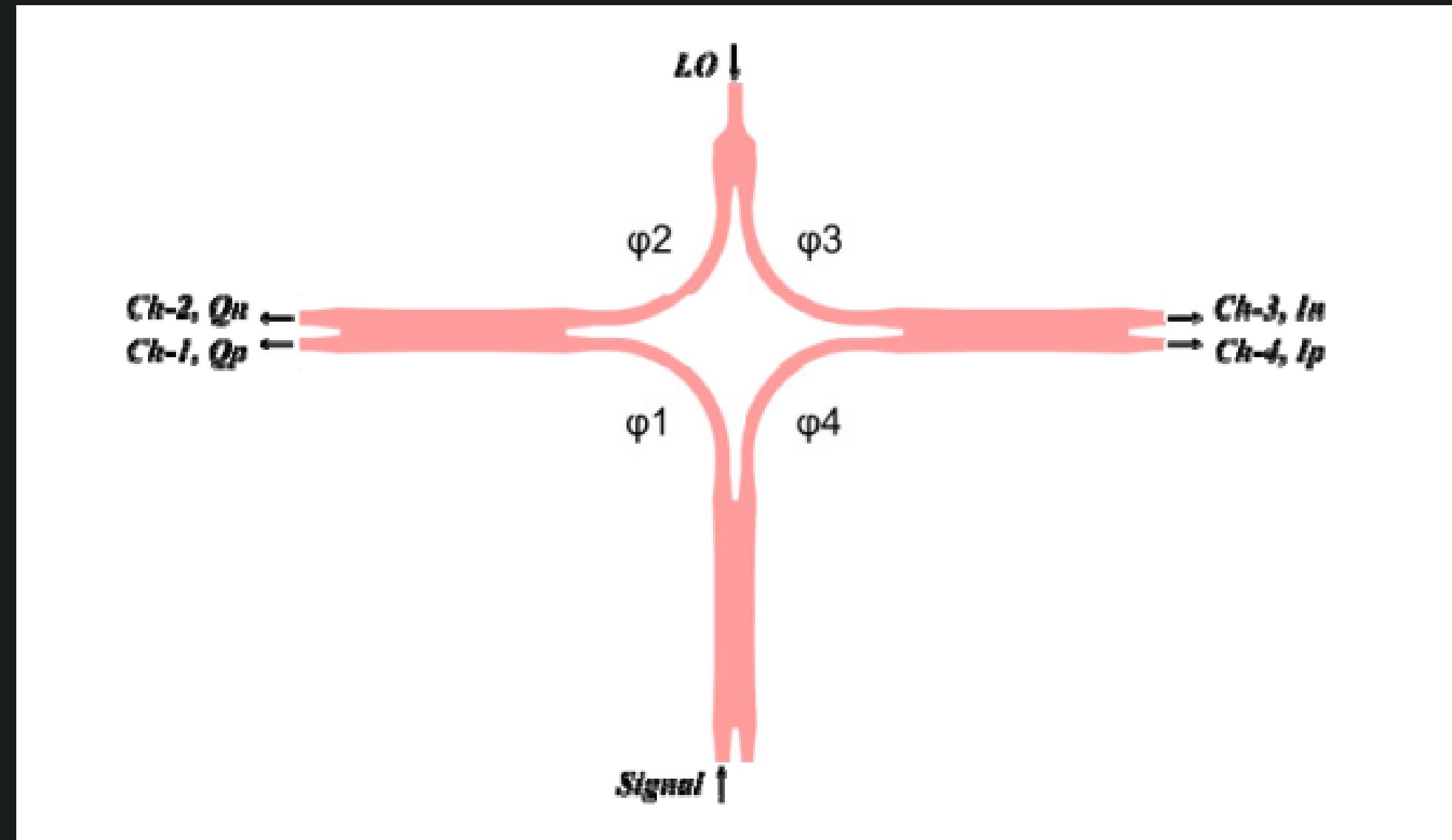
# 90° Optical Hybrid

Week 3

Leonardo Pessôa

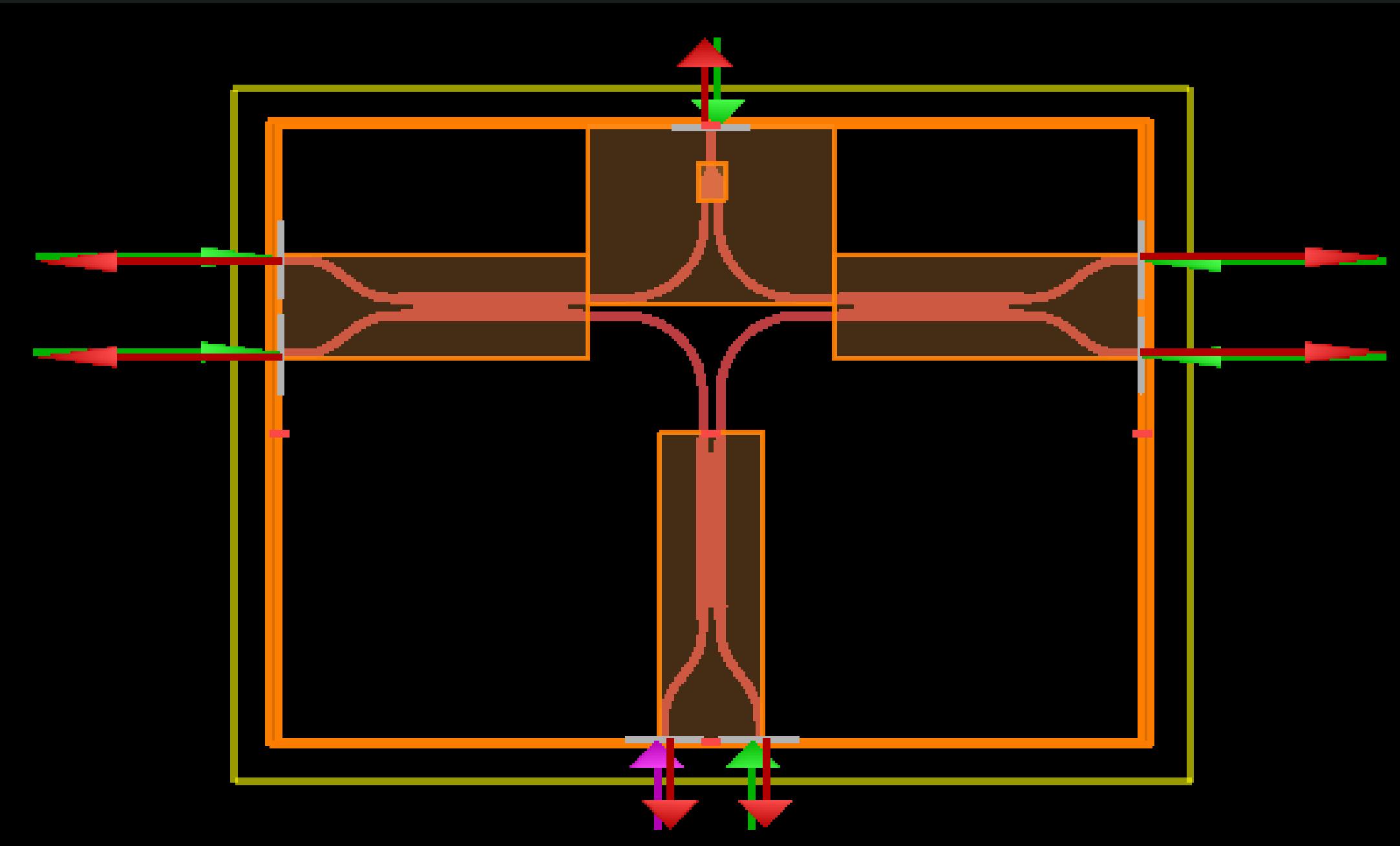
# Objective

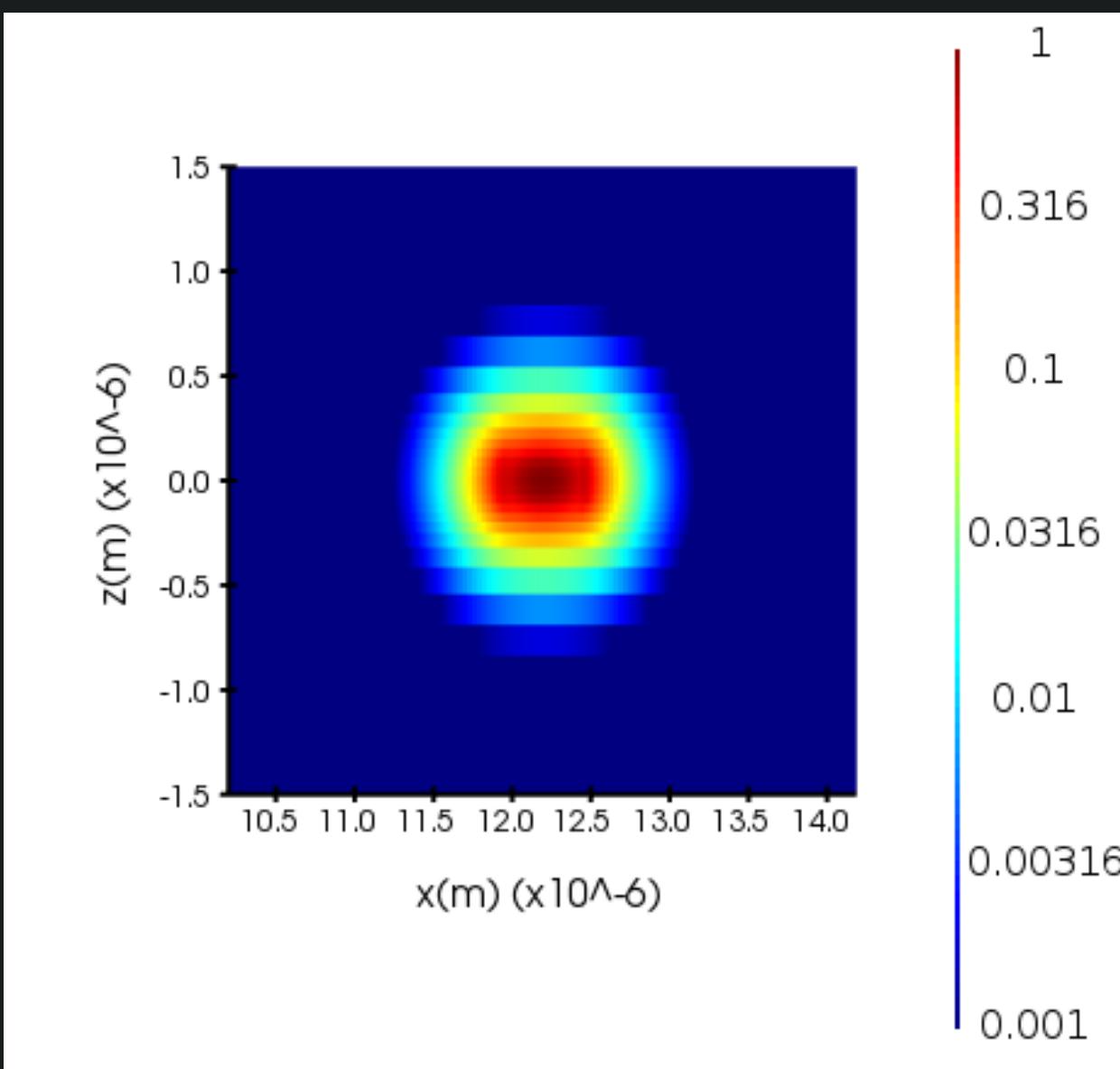
- Assemble the circuit with the components made on week 1.



# FDTD





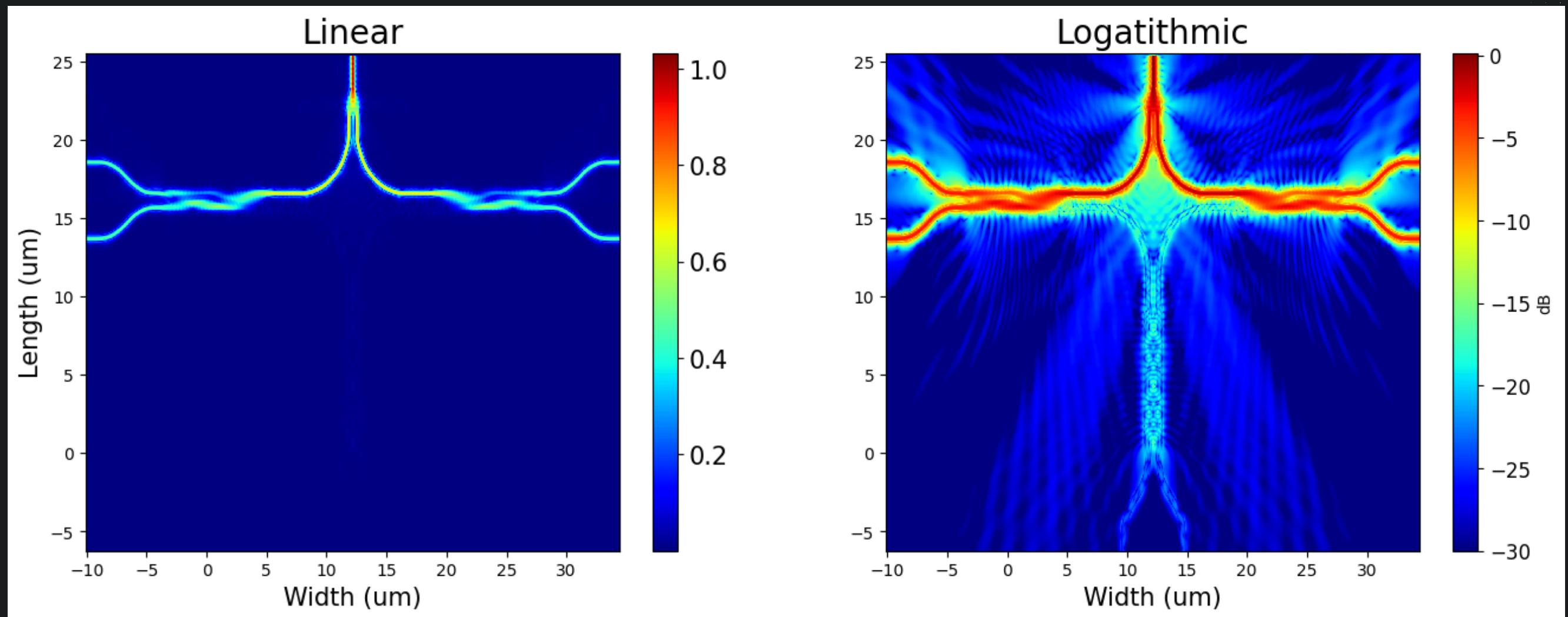


# Simulation Settings

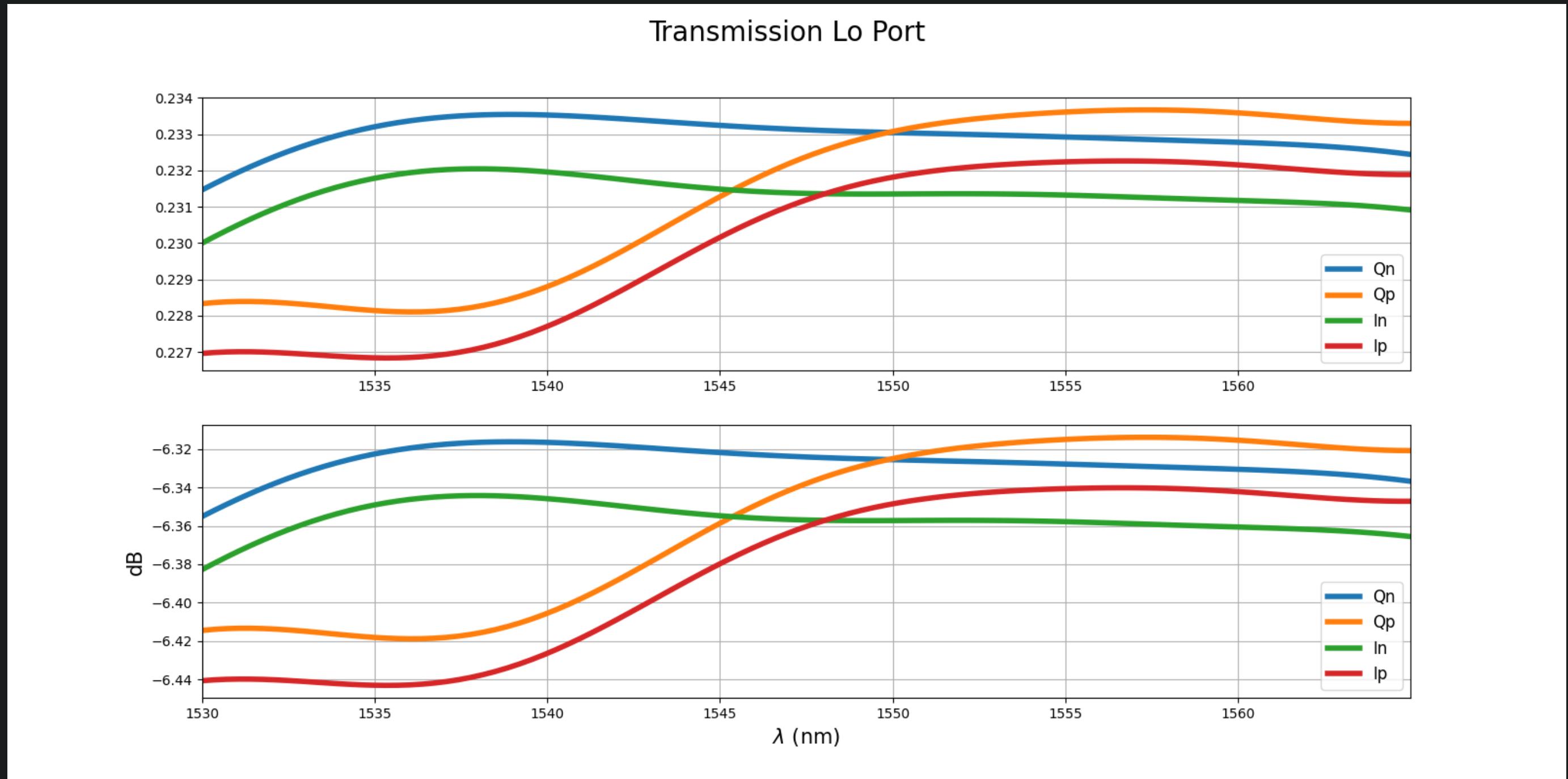
- Time = 1500fs
- FDTD Mesh = 2
- Structures Mesh = 0.03 dx and dy
- Boundary Conditions = PML and Symmetric Z min bc
- Ports y span = 4um
- Ports z span = 3um
- Frequency Points = 100



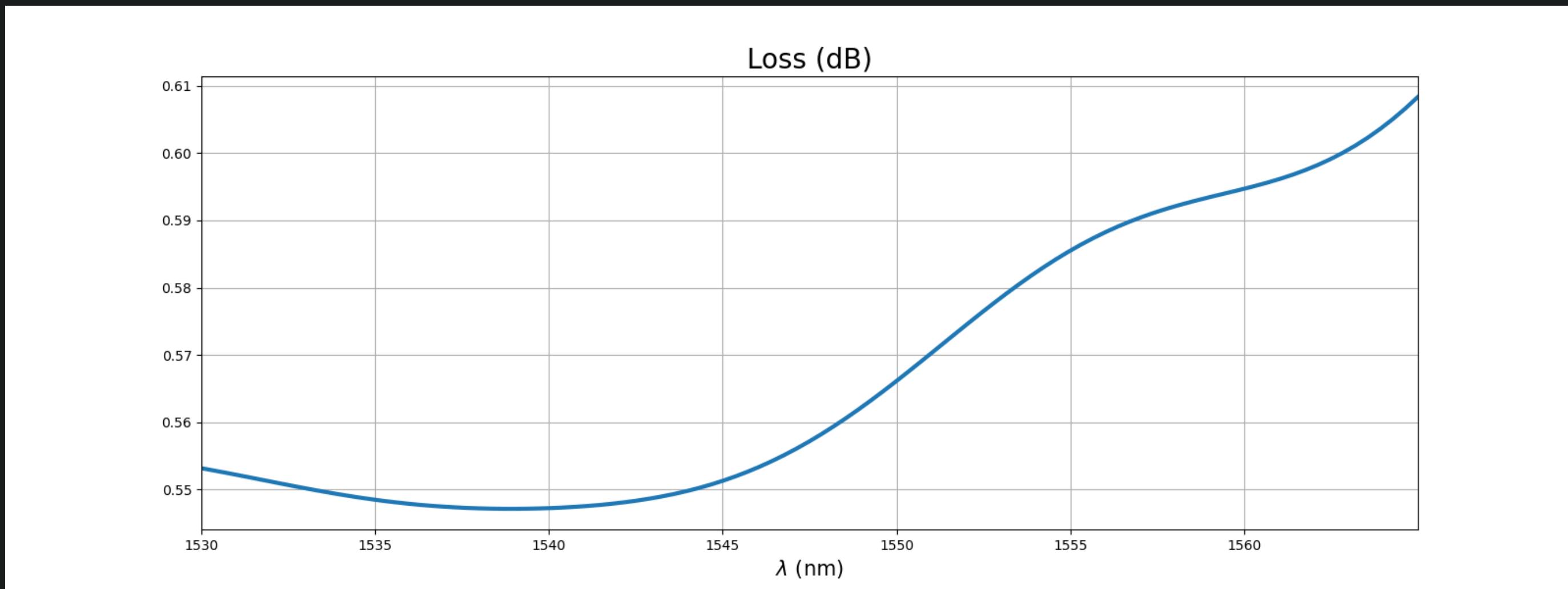
# Field - Lo Input



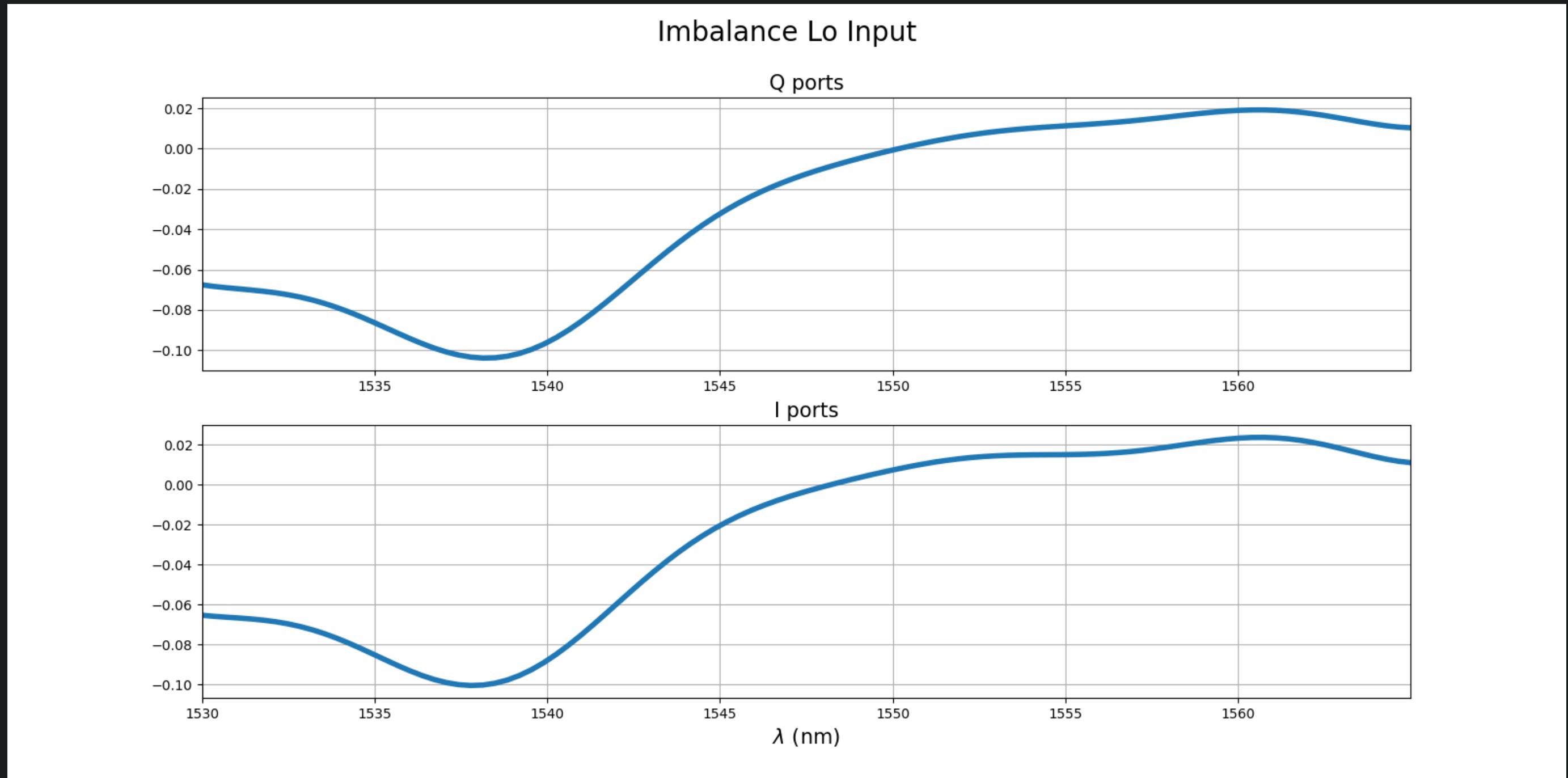
# Transmission Lo Input



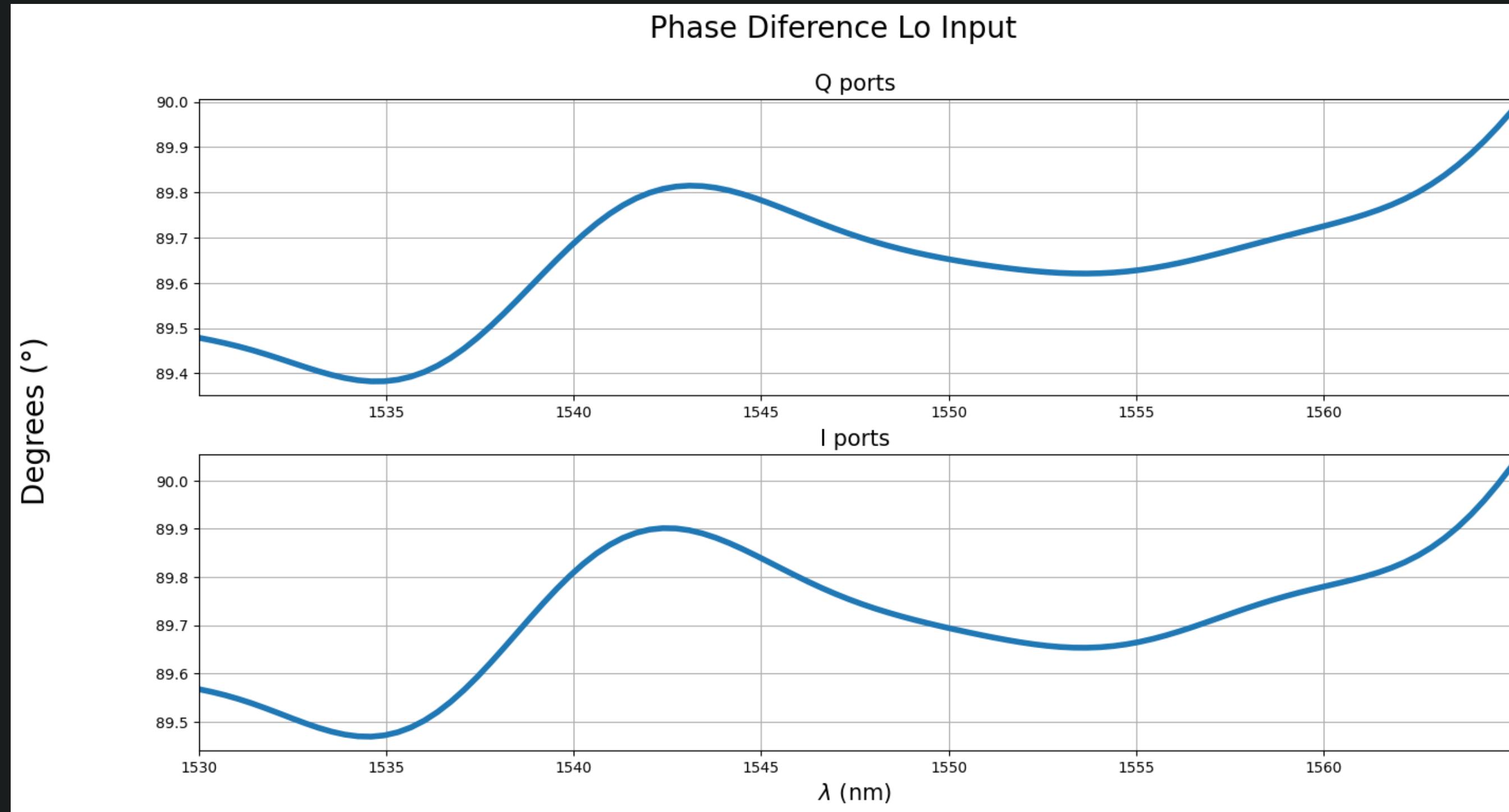
# Loss (dB) - Lo Input



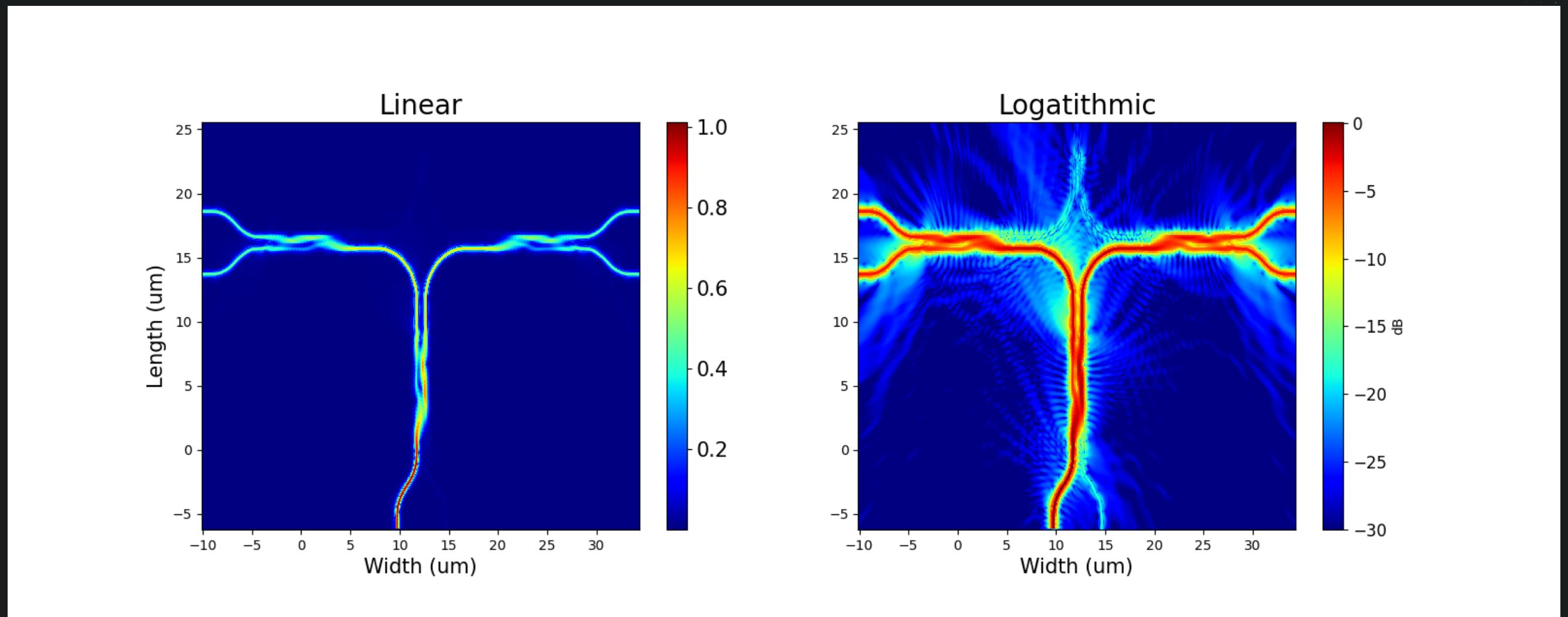
# Imbalance - Lo Input



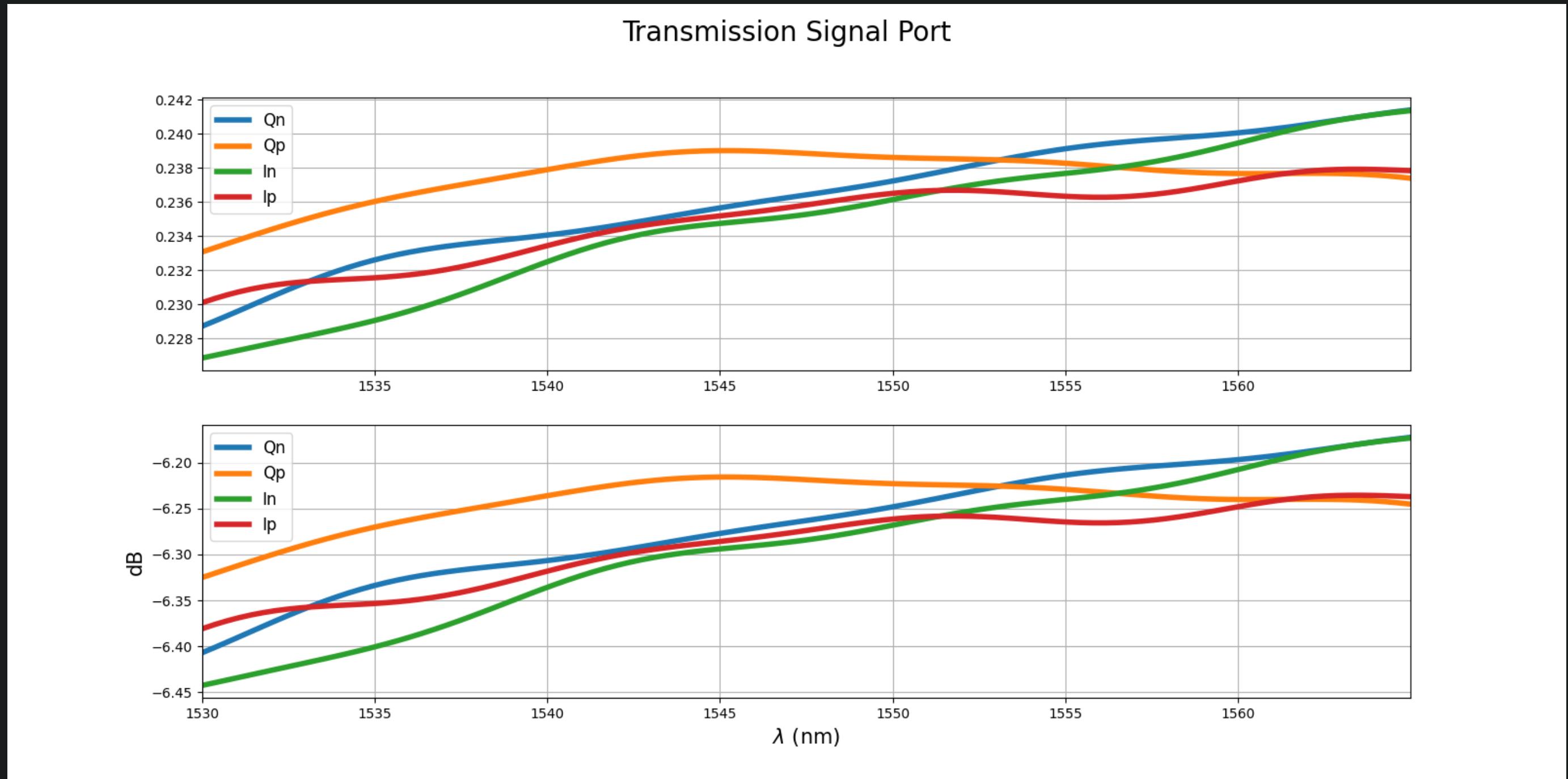
# Phase Difference - Lo Input



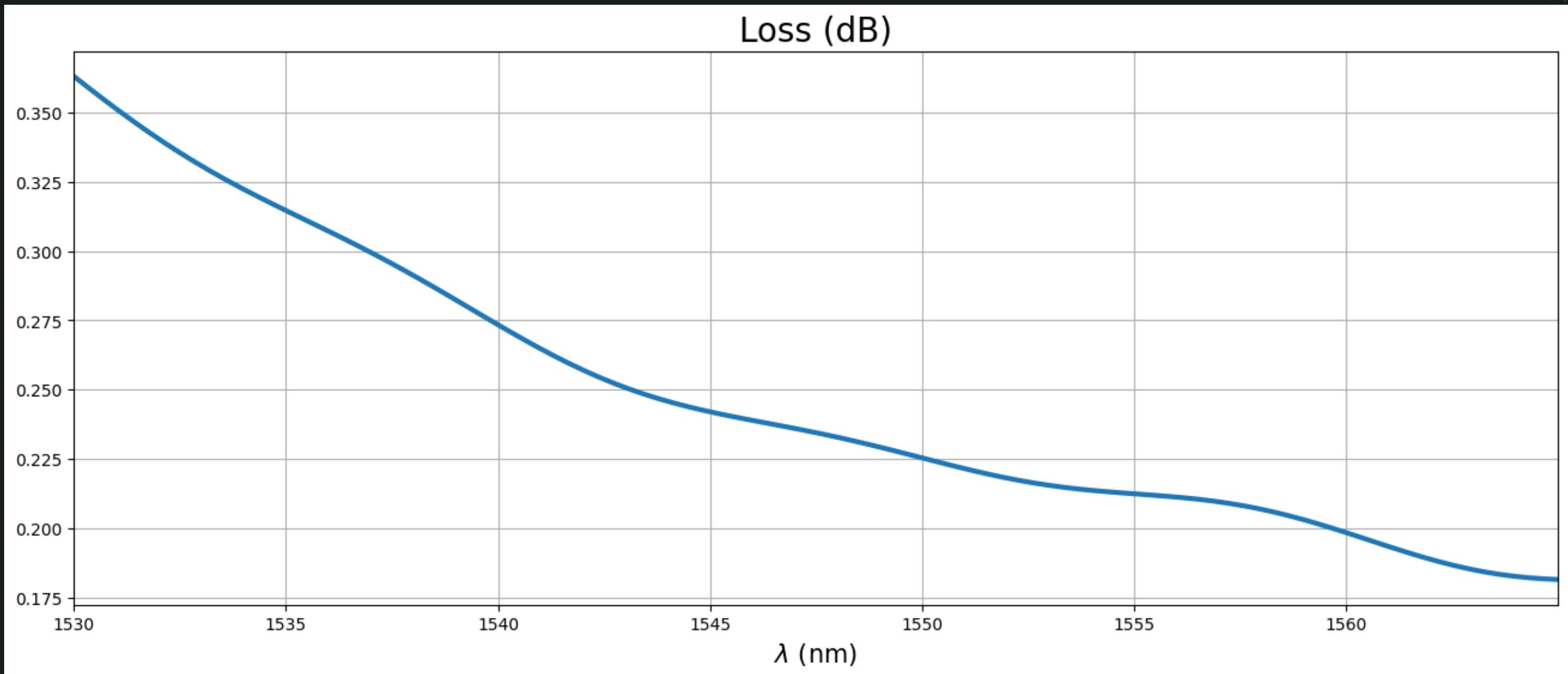
# Field - Signal Input



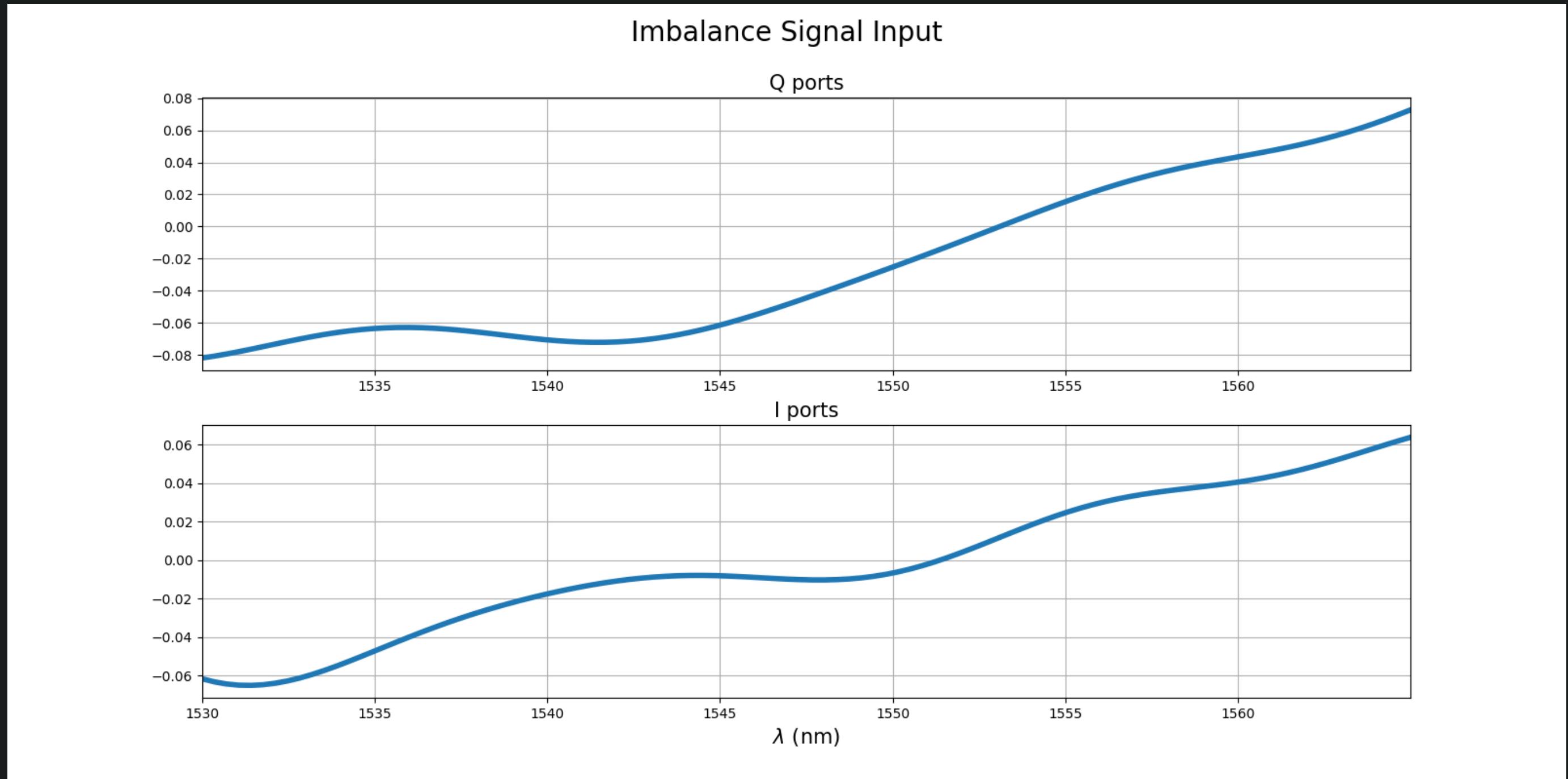
# Transmission Signal Input



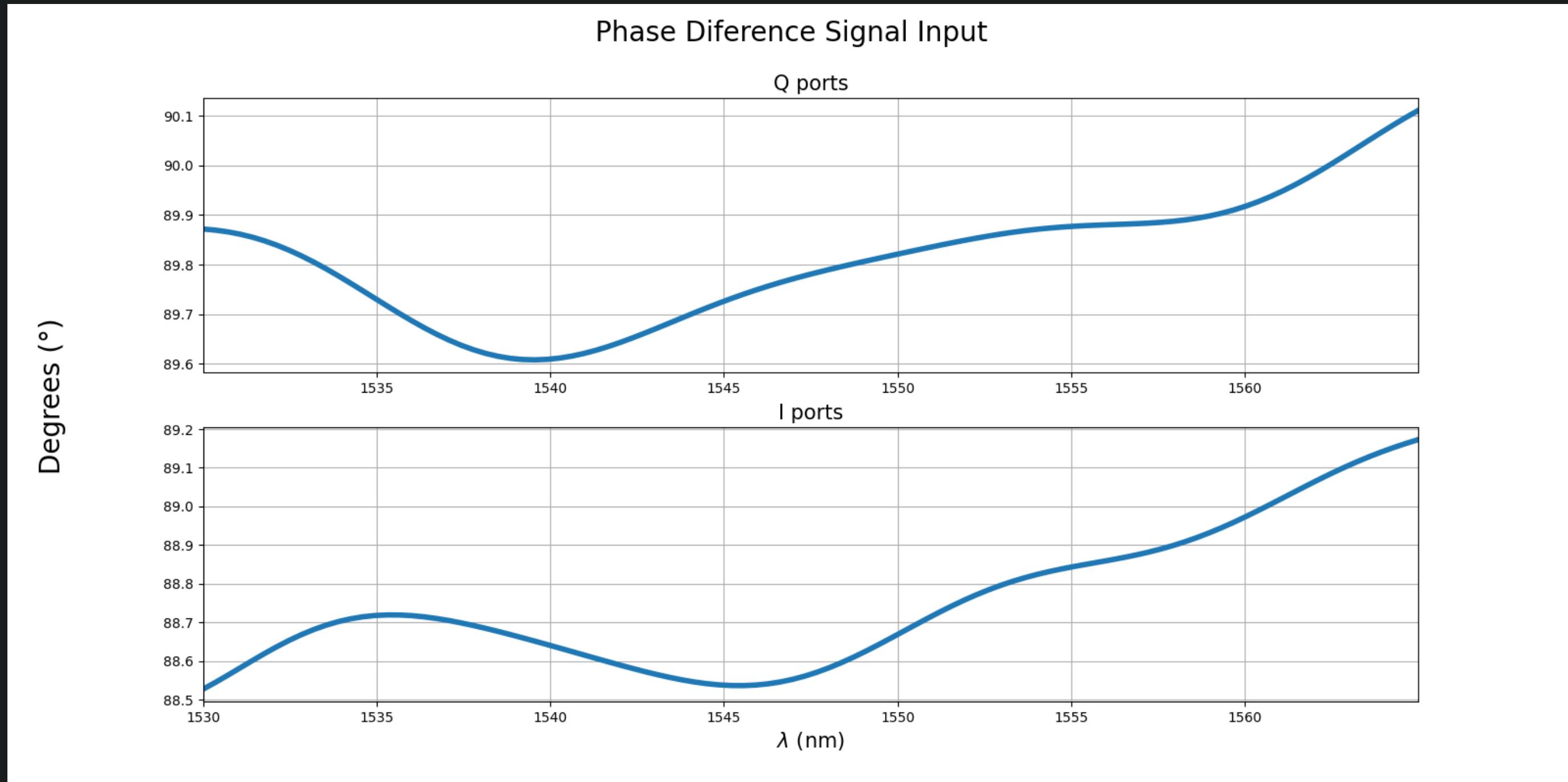
# Loss (dB) - Signal Input



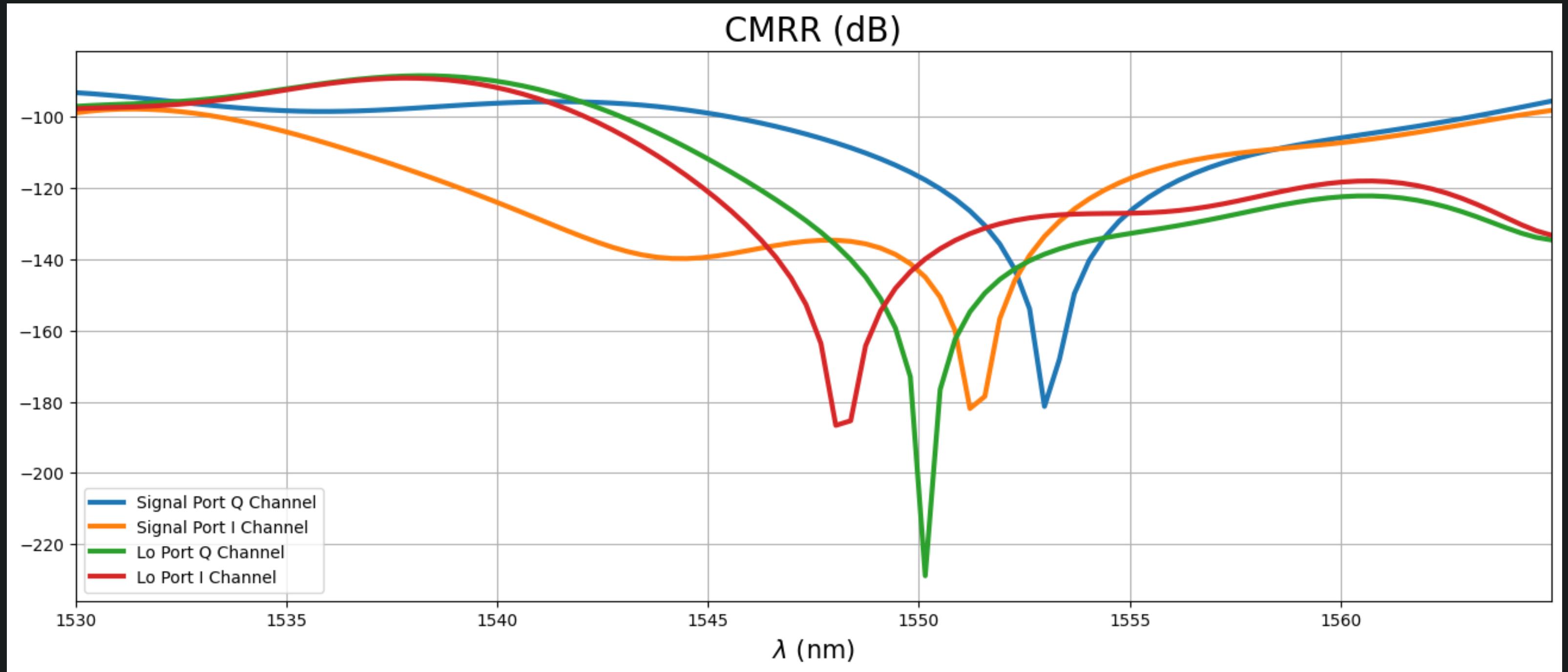
# Imbalance - Signal Input



# Phase Diference - Signal Input

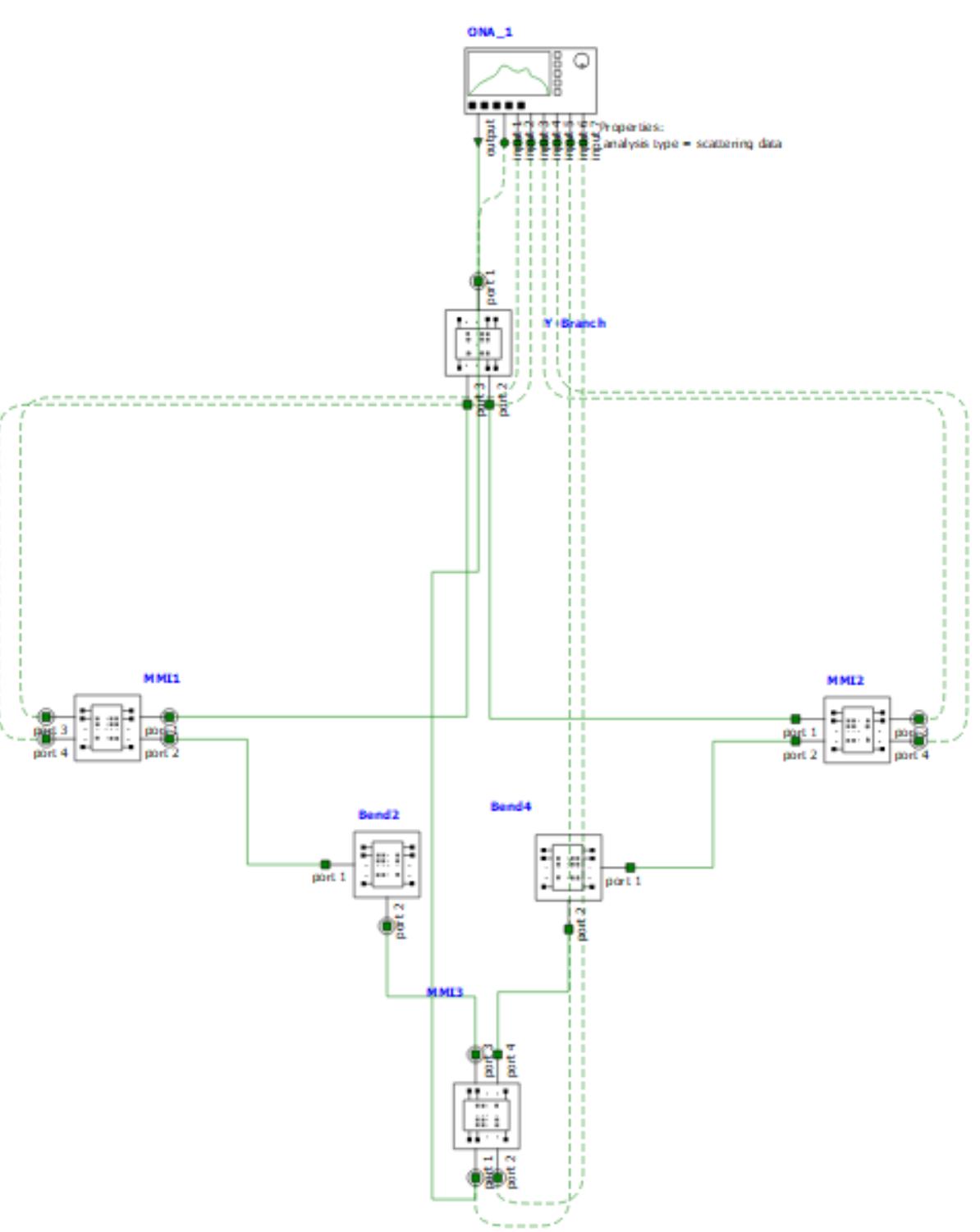


# CMRR (dB)

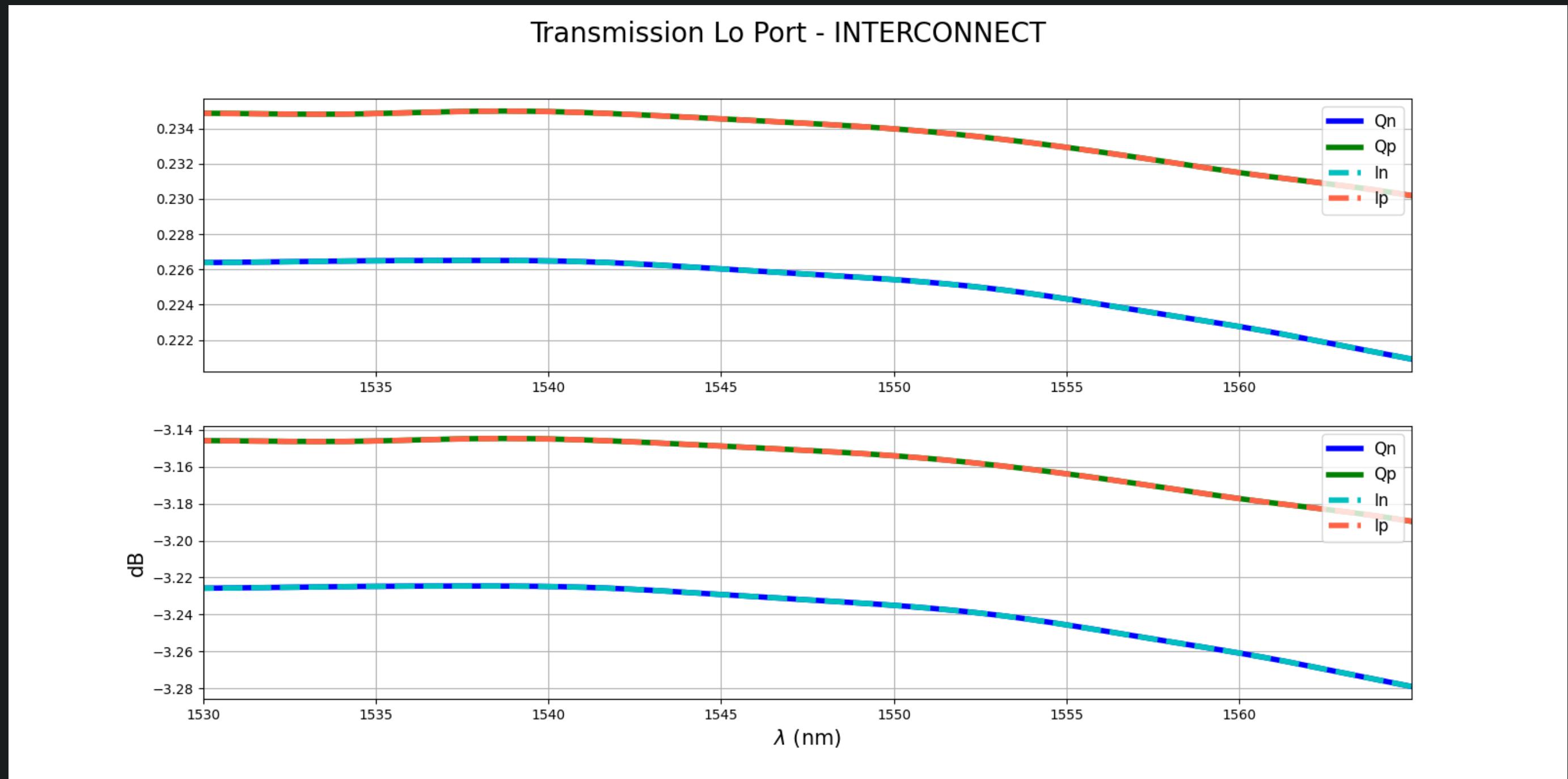


# INTERCONNECT

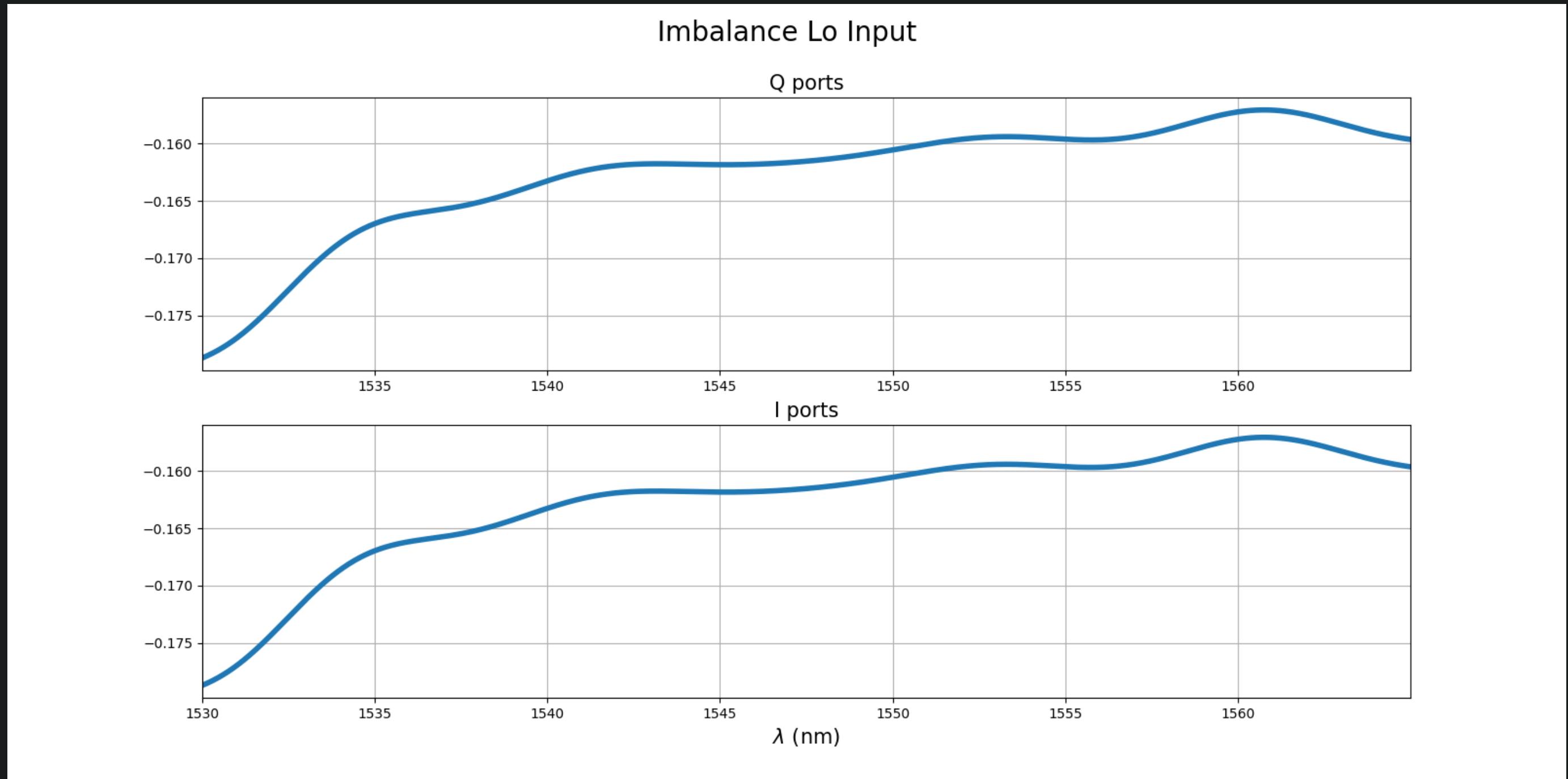




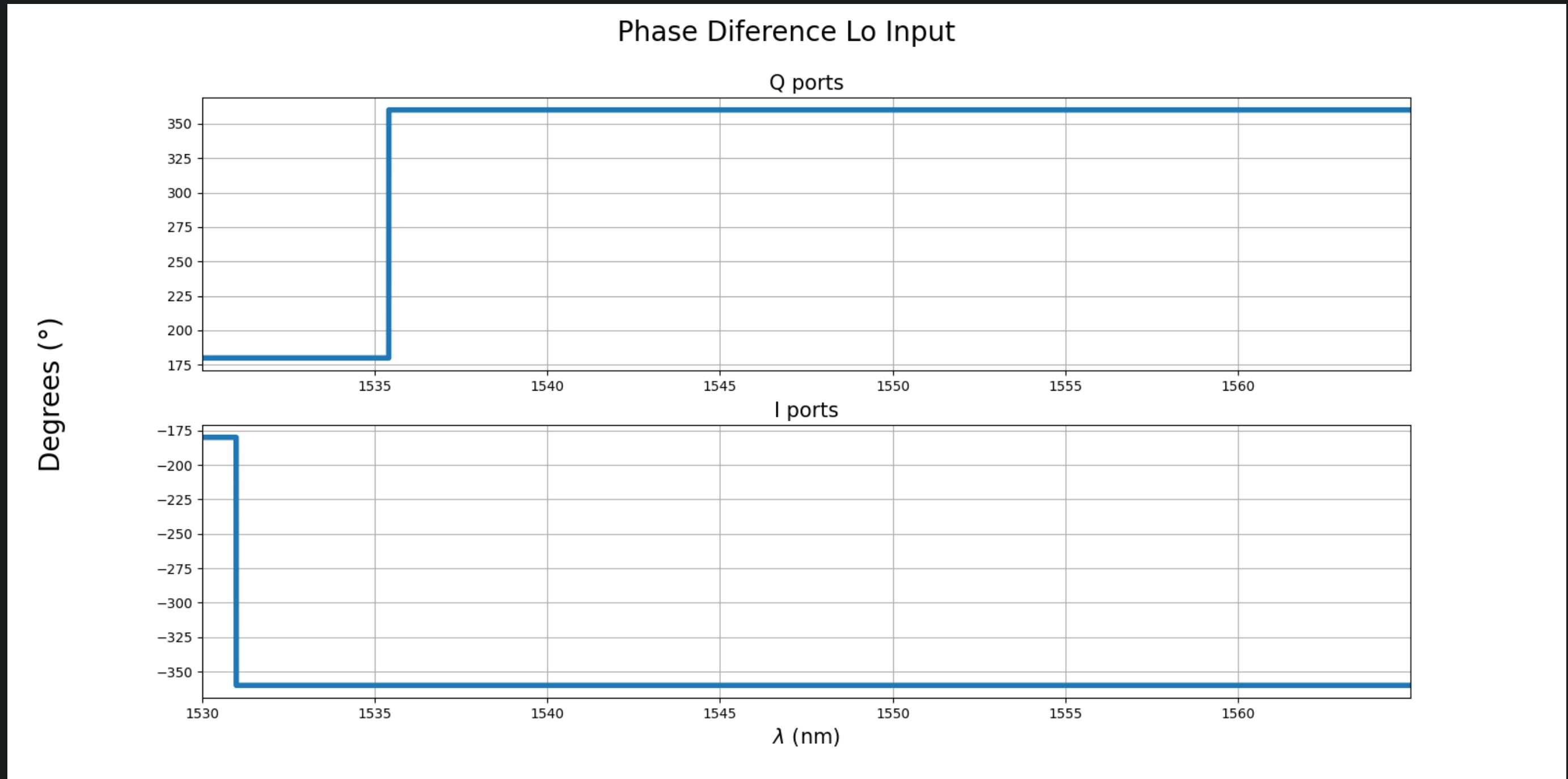
# Transmission Lo Input



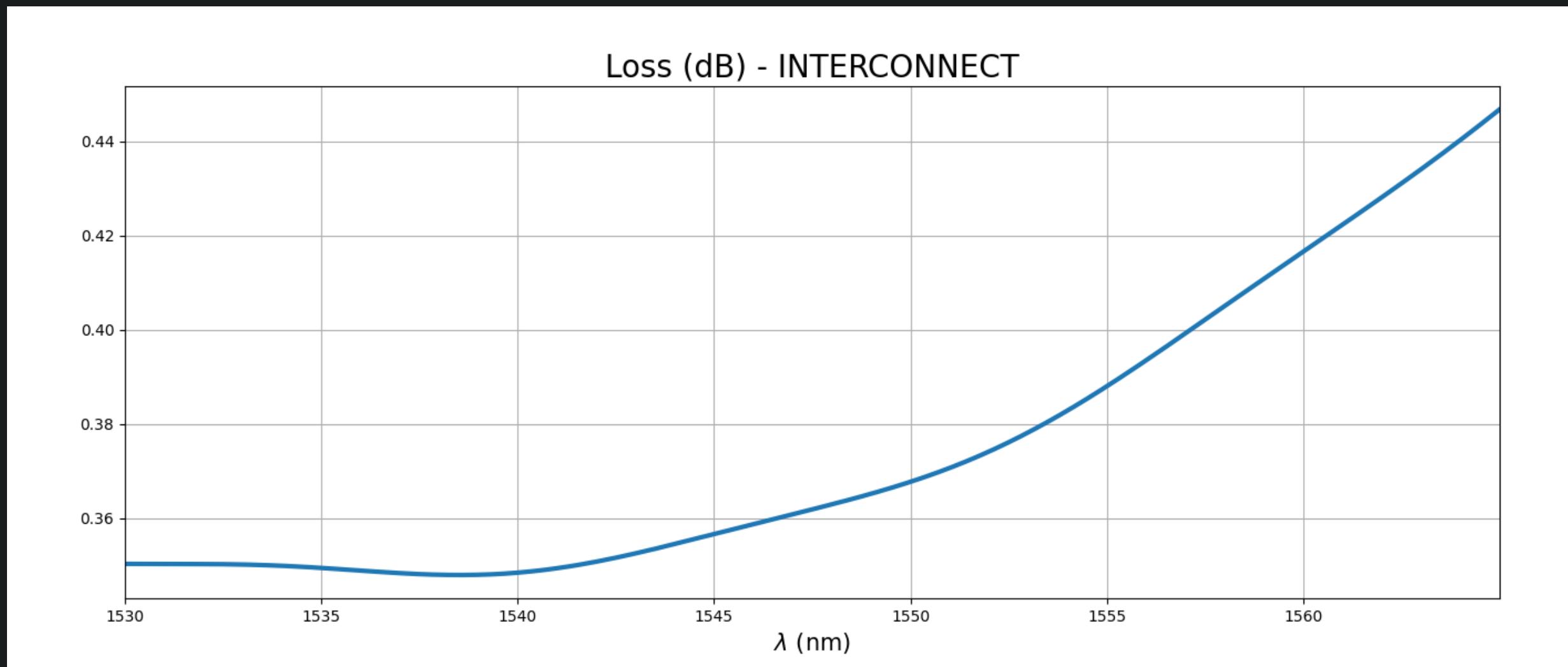
# Imbalance - Lo Input



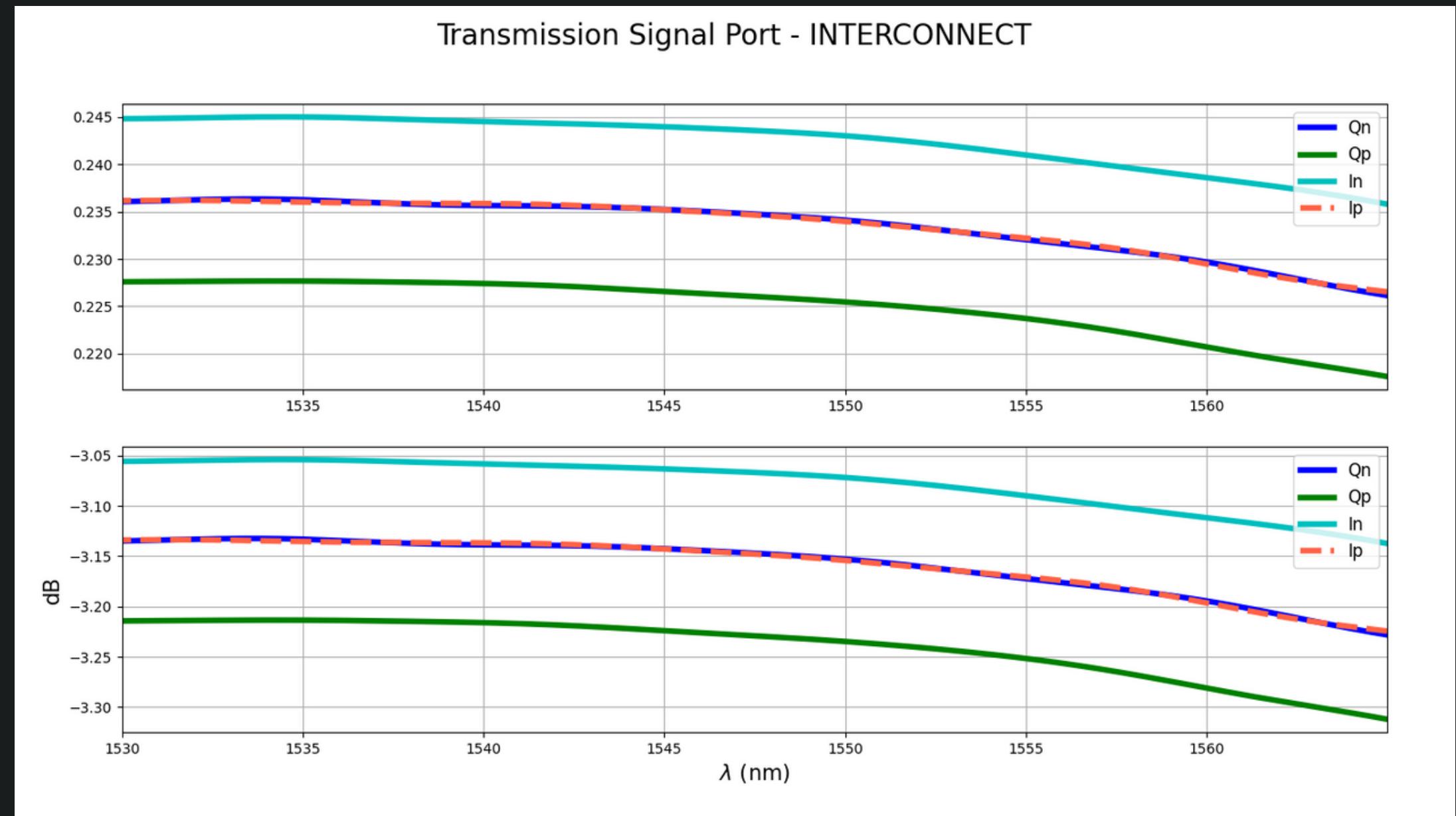
# Phase Diference - Lo Input



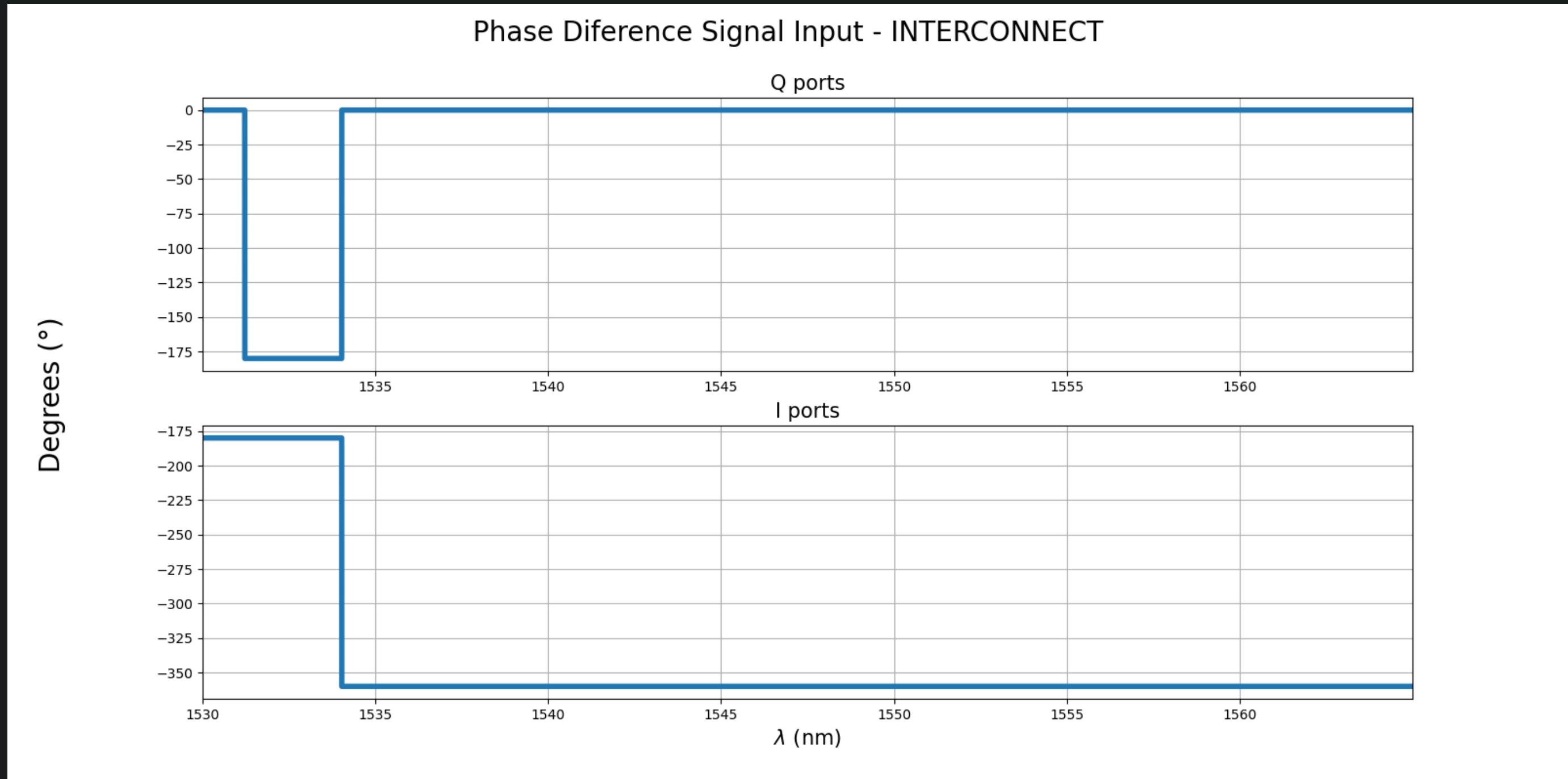
# Loss (dB) - Lo Input



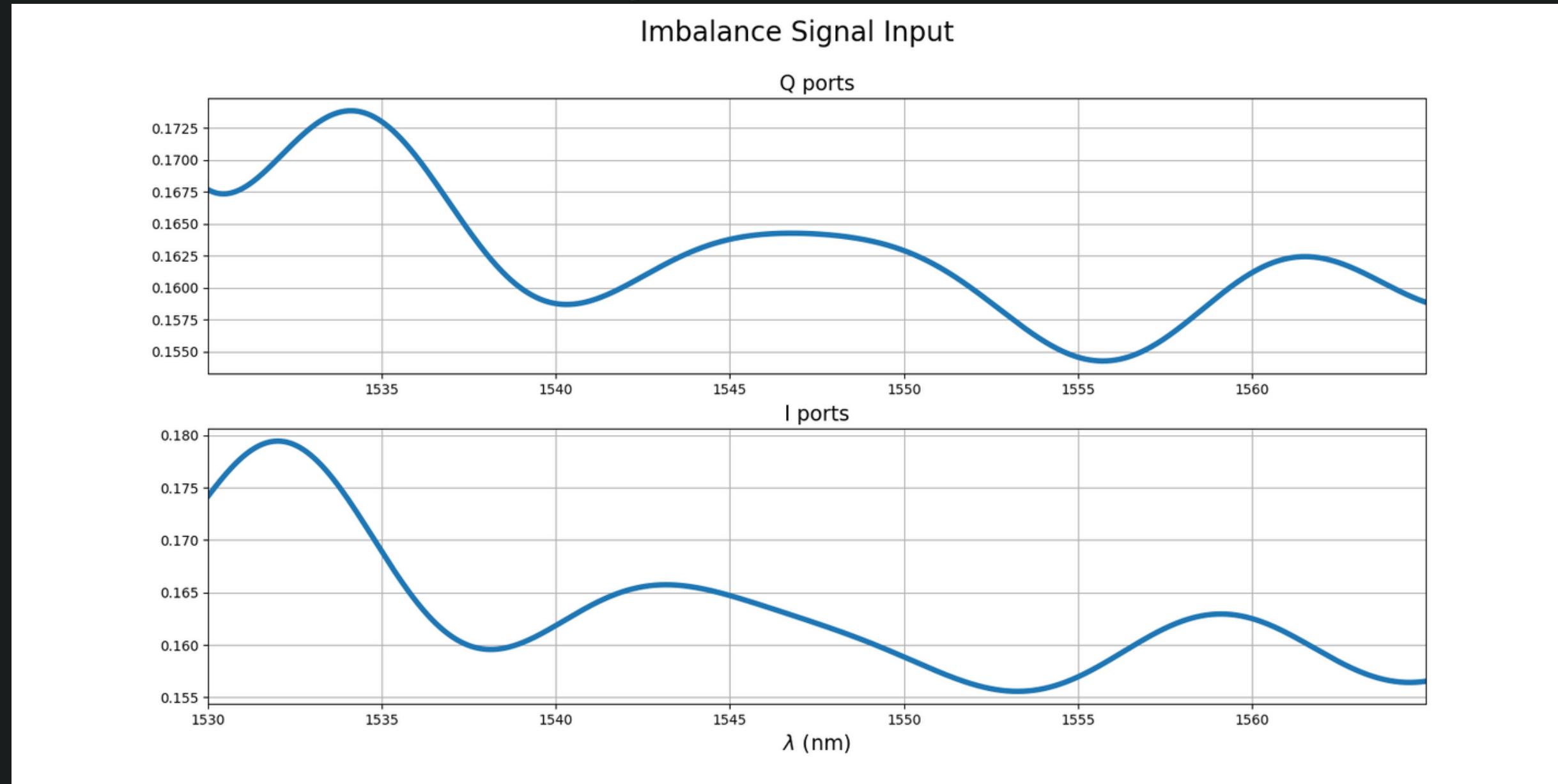
# Transmission Signal Input



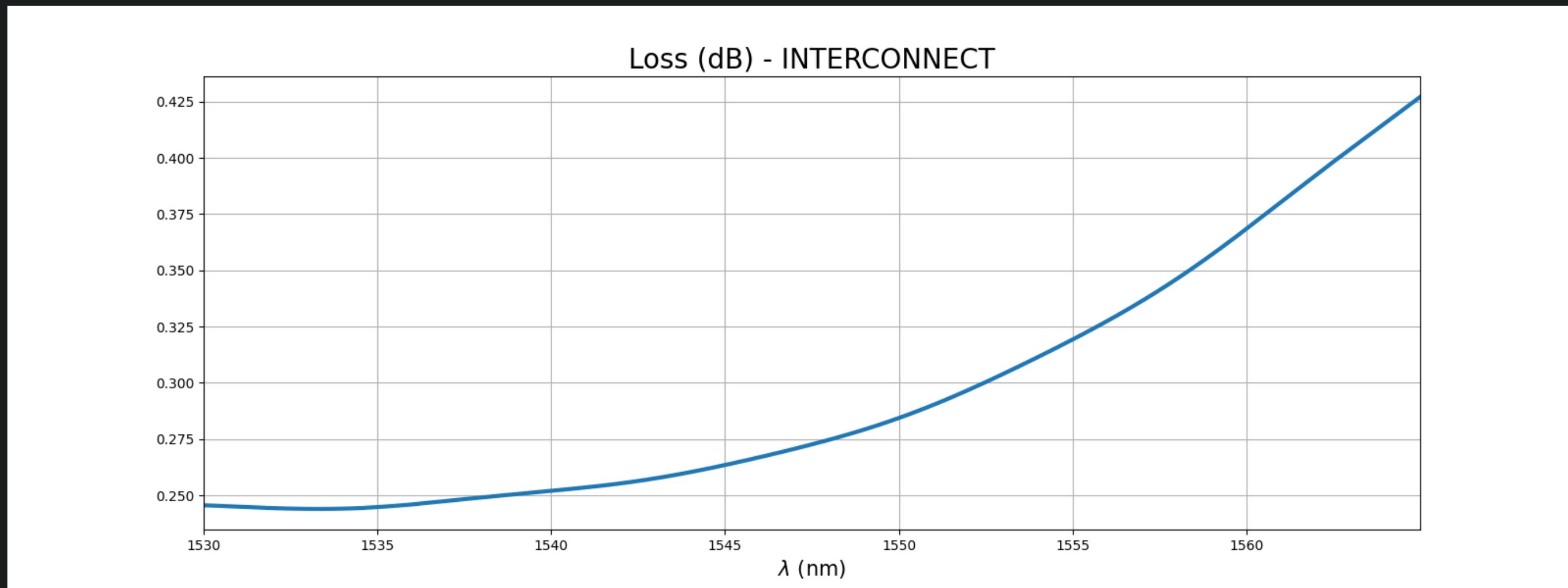
# Phase Diference - Lo Input



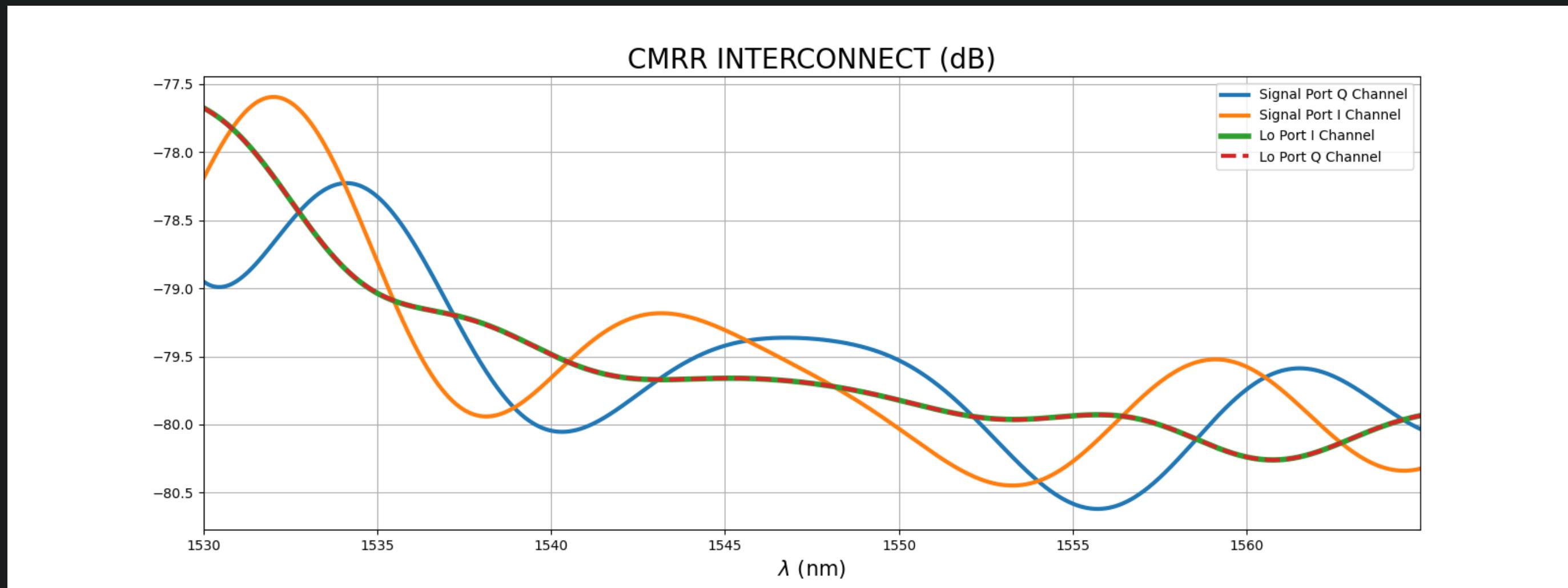
# Imbalance - Signal Input



# Loss (dB) - Signal Input



# CMRR (dB)



# Conclusion

The INTERCONNECT phase results are wrong and the INTERCONNECT and FDTD results diverges a bit. This is expected as the precision of INTERCONNECT is way lower.

With that in mind we should consider FDTD results as the right ones.