Relatório de atividade

Anel de ressonância FSR = 18.5nm / FWHM = 75 GHz

Caio Rodrigues Correia de Oliveira

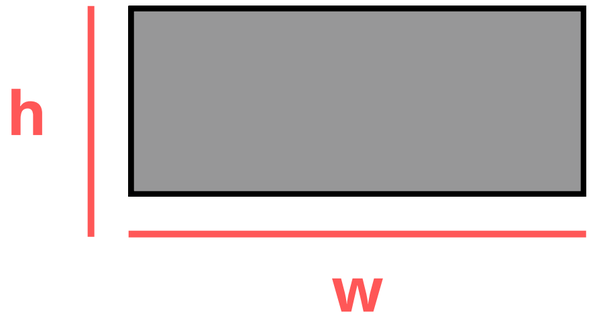
03/09/2022

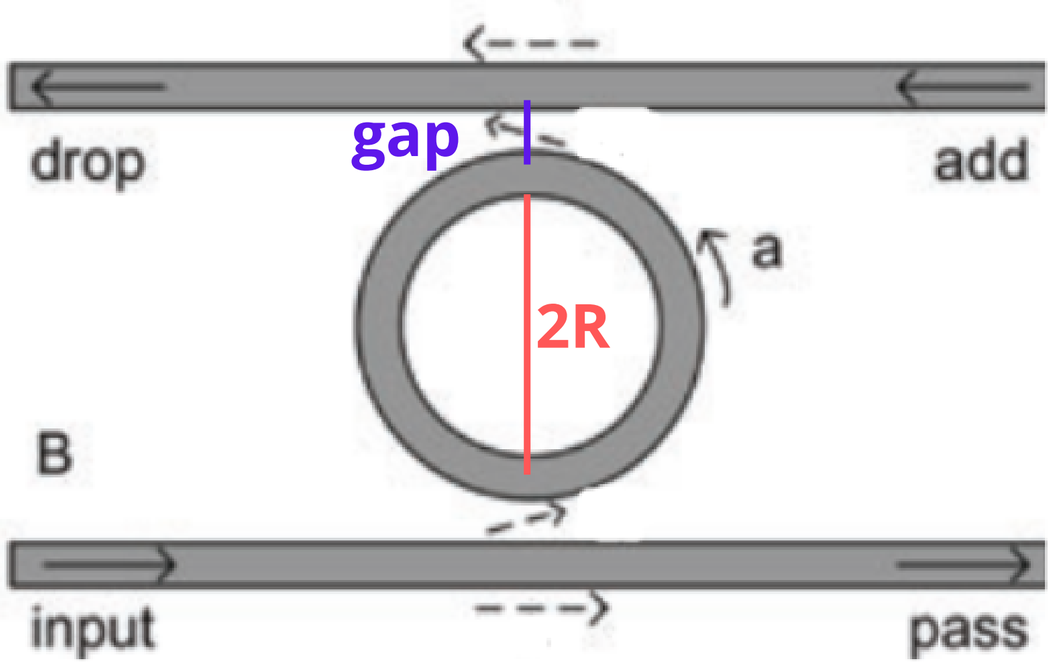
Análise de parâmetros

Add-drop

Considerações iniciais:

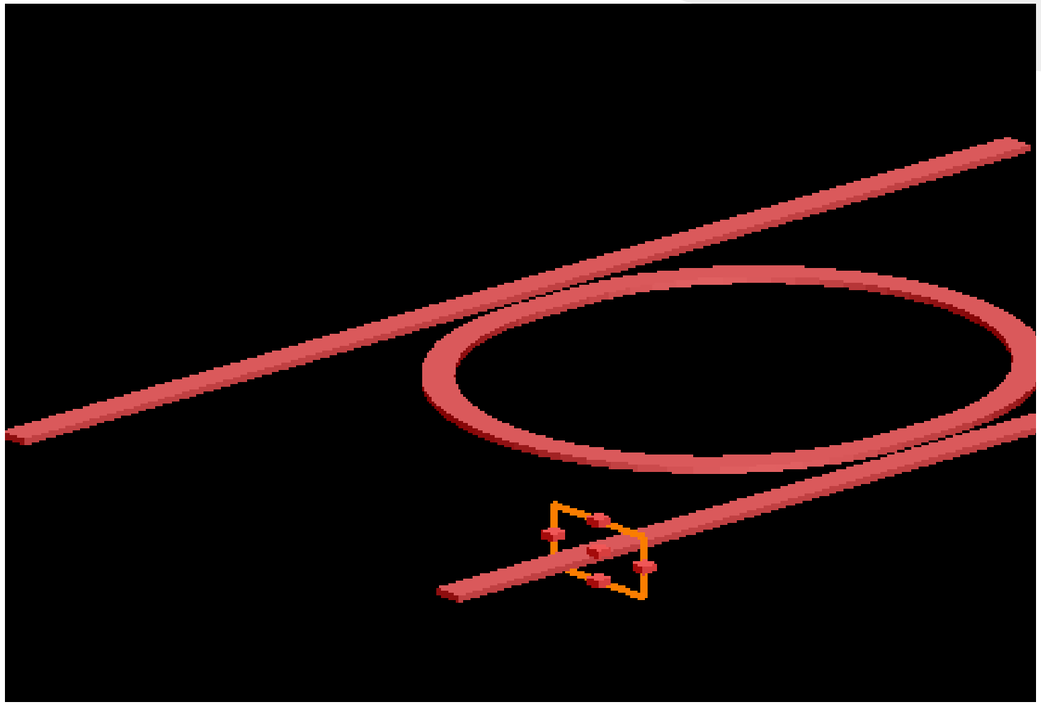
- a = 1
- R = 3um
- h = 0.22um
- w = 0.5um
- gap = 150nm





Análise de parâmetros

Add-drop



Em 1550nm:

effective index
2.446284-1.007138e-08i
group index
4.210136+3.381116e-07i

Análise de parâmetros

Add-drop

Valores teóricos obtidos

$$L = 30.5890\ um$$

$$r^2 = 0.9001$$

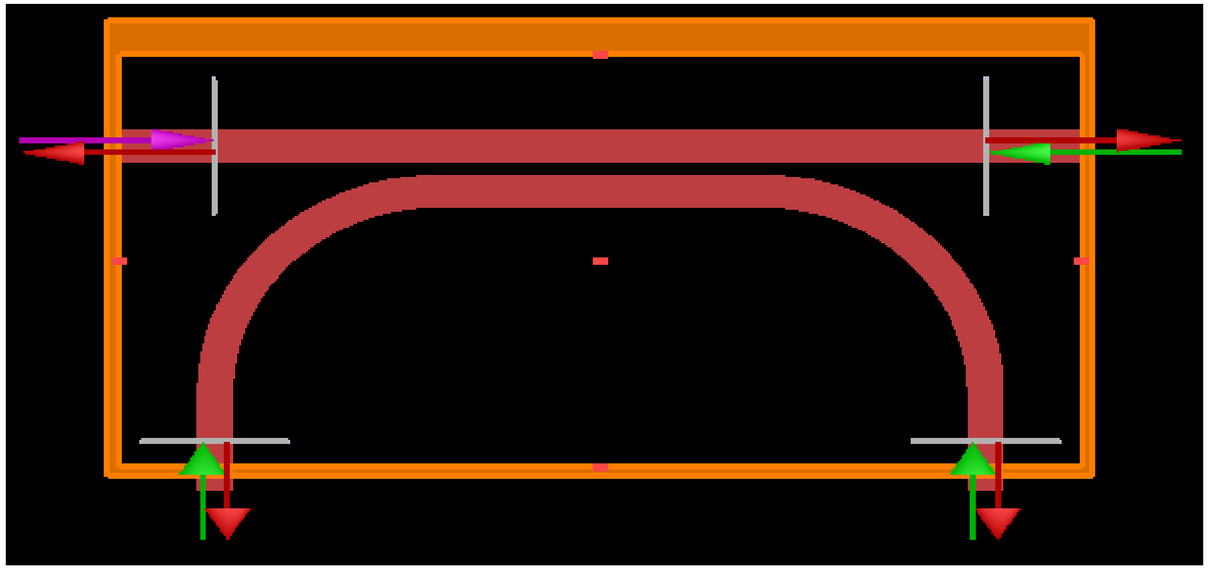
$$k^2 = 0.0999$$

Para:

FSR = 18.5nm
FWHM = 0.62nm

Análise de parâmetros

Add-drop

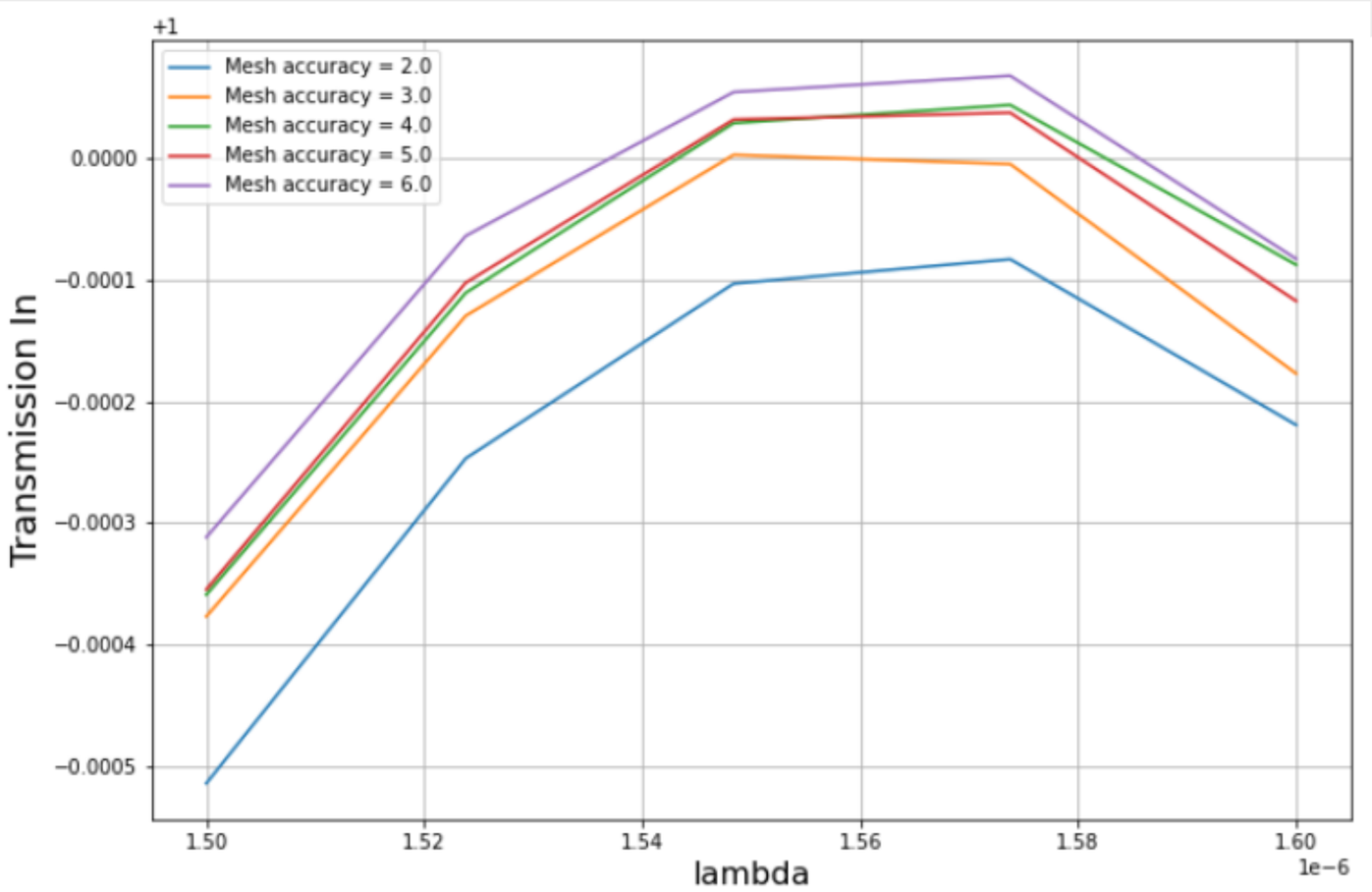


Análises realizadas:

- Mesh convergence Sweep
- Lc Sweep
- Lc and Gap Sweep

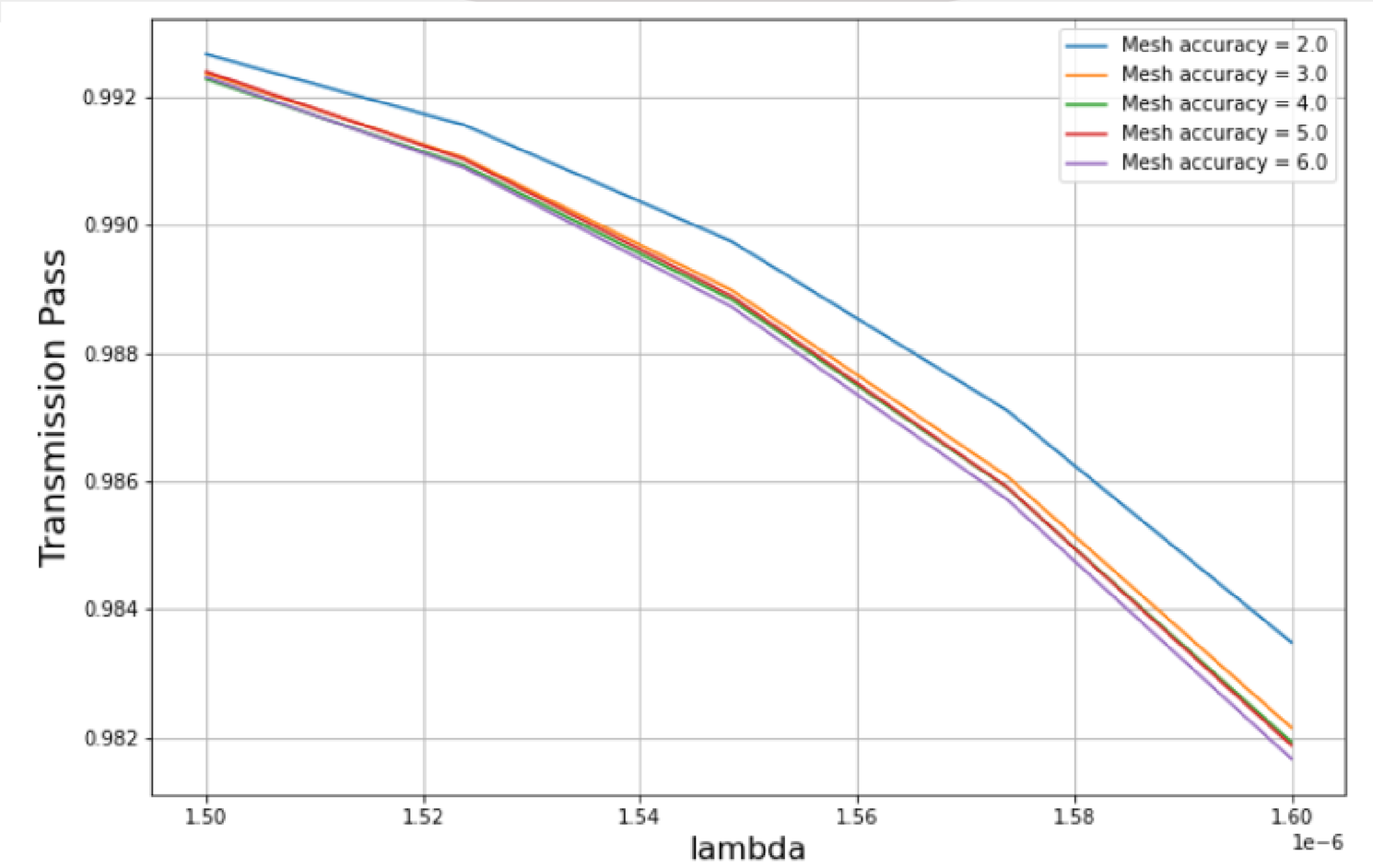
Análise de parâmetros

Add-drop - Mesh Sweep



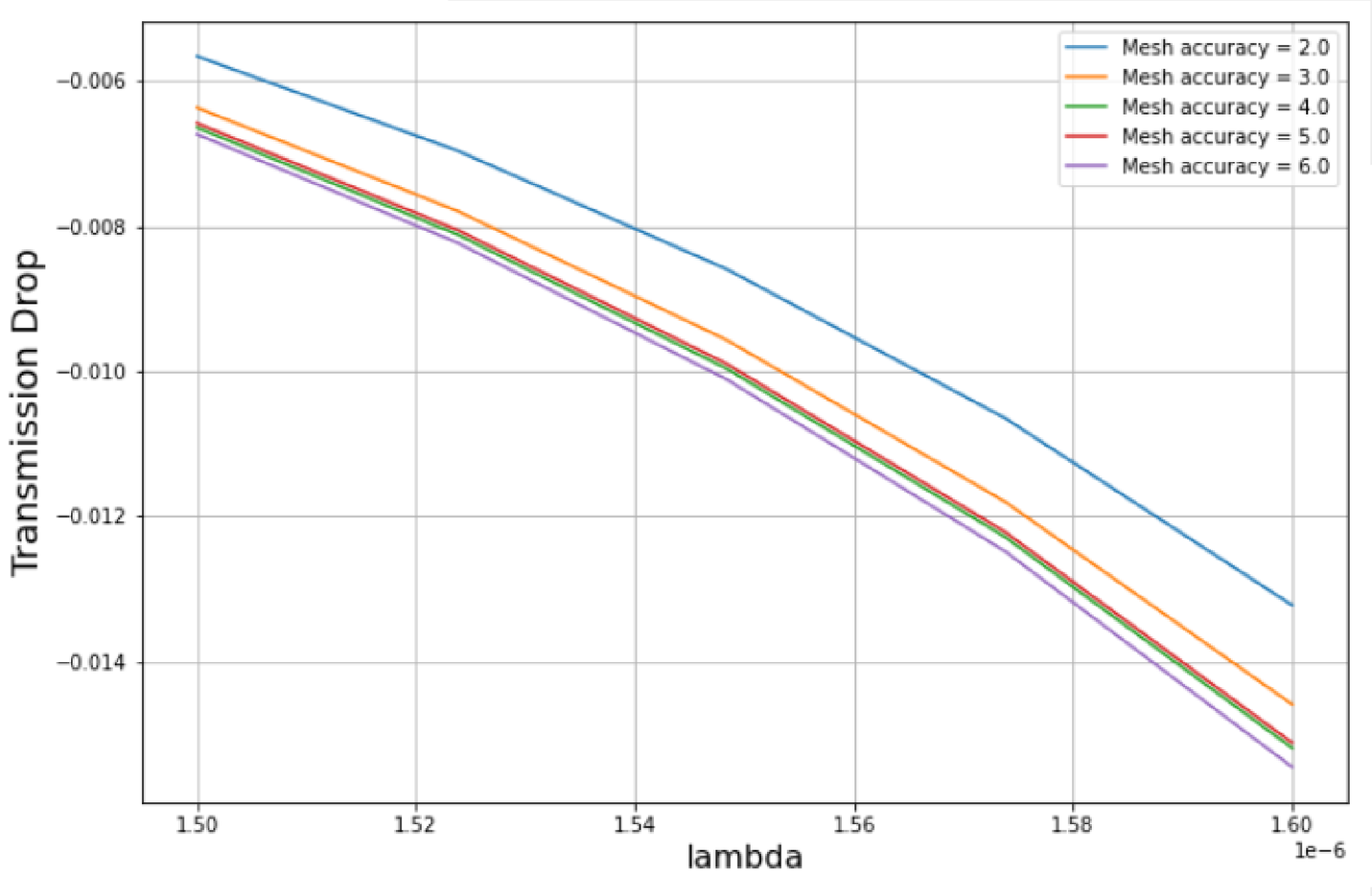
Análise de parâmetros

Add-drop - Mesh Sweep



Análise de parâmetros

Add-drop - Mesh Sweep

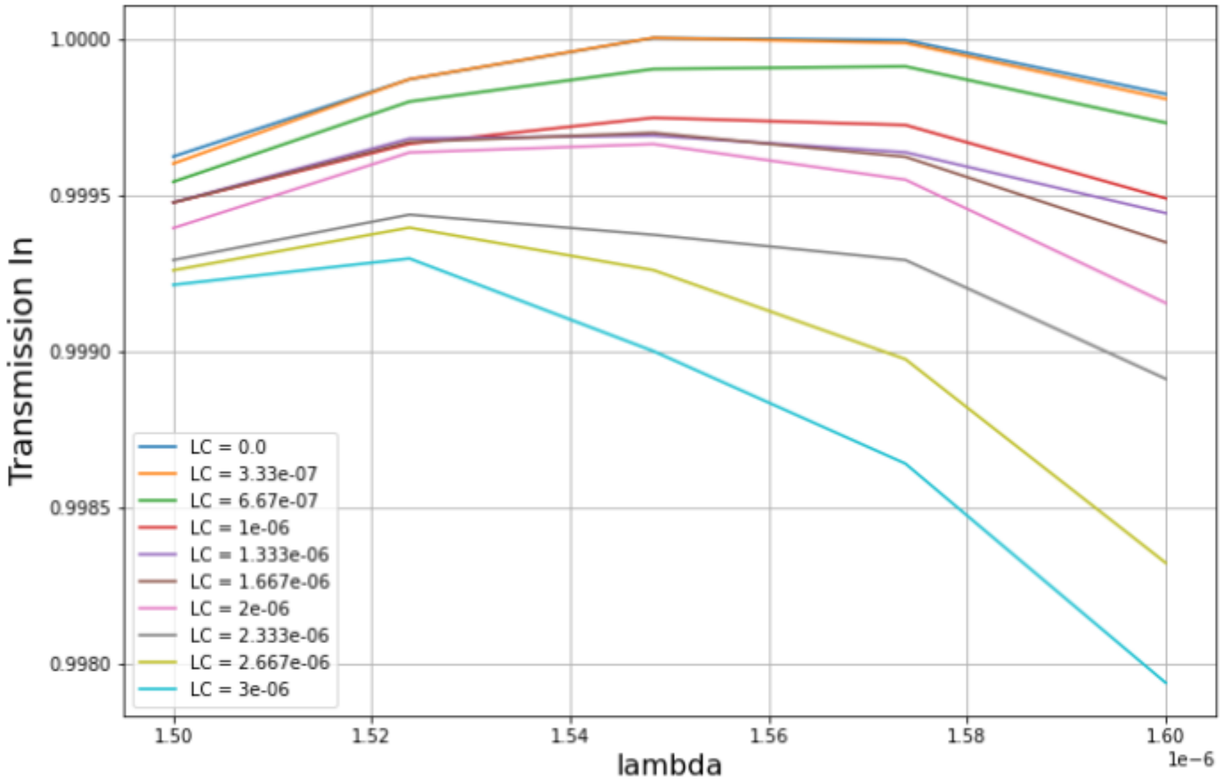


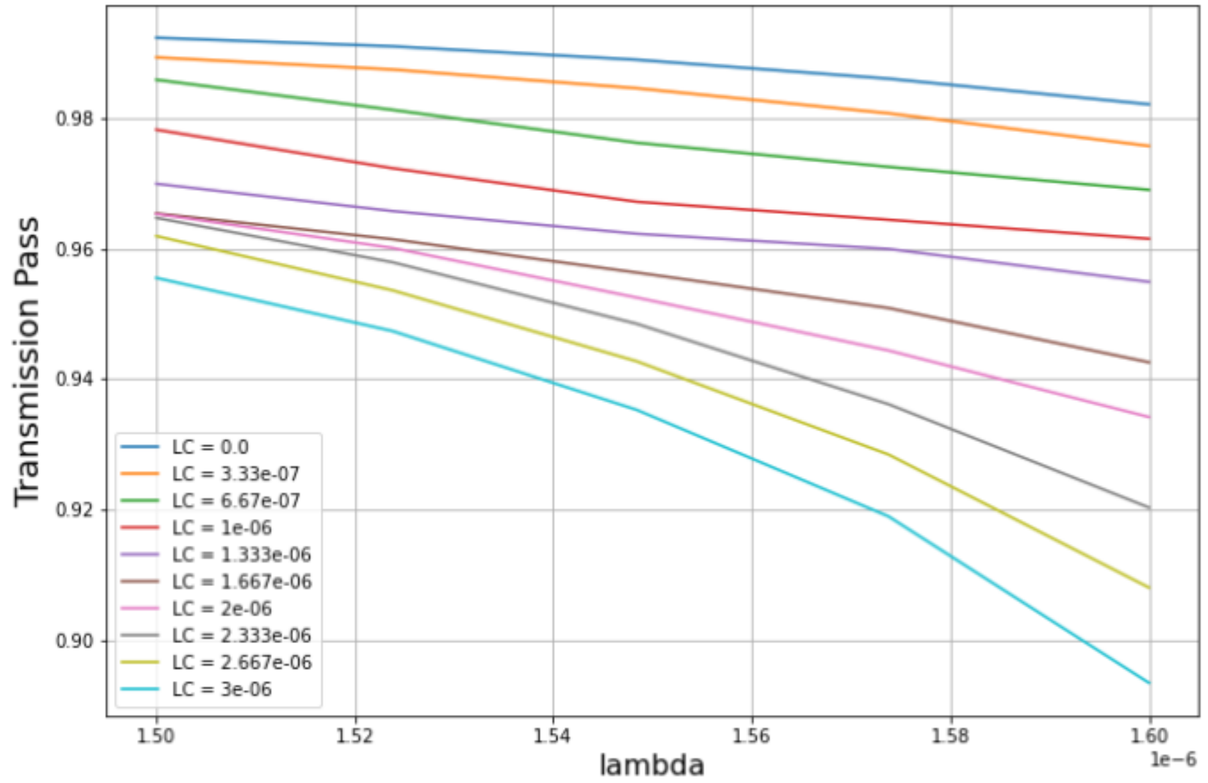
Conclusão:

Mesh ideal = 4

Análise de parâmetros

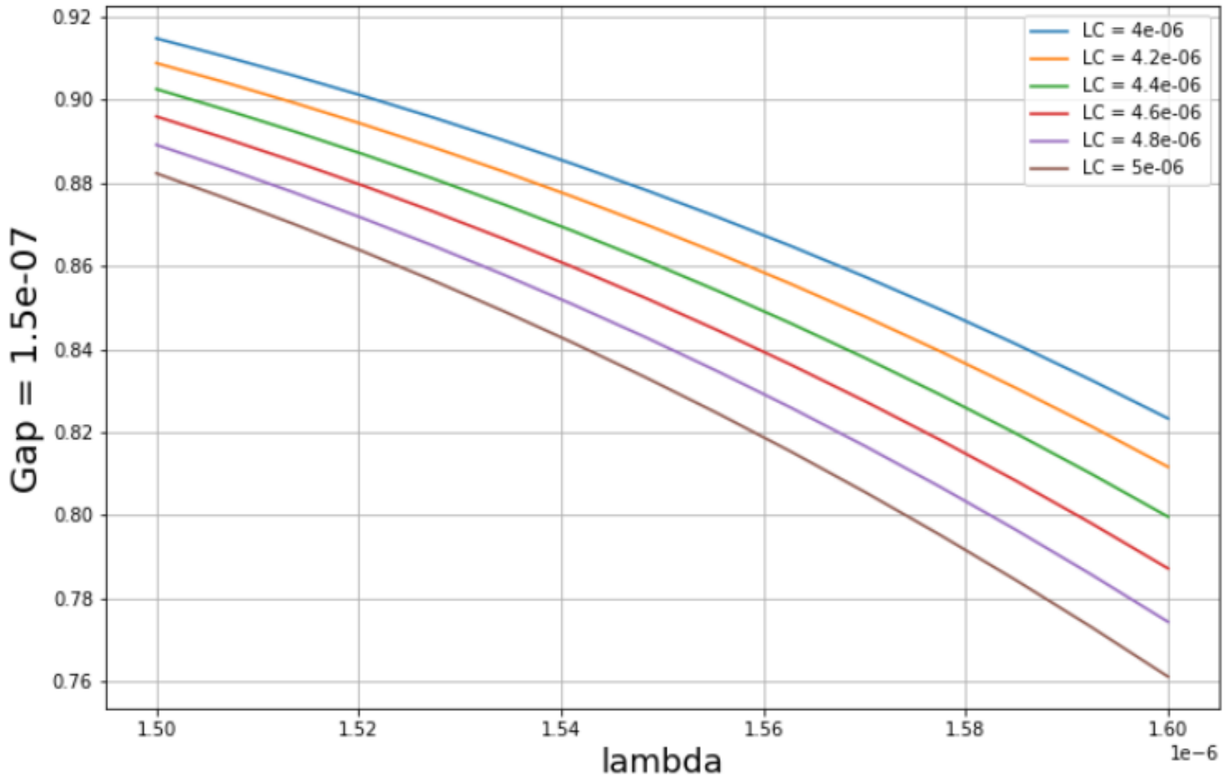
Add-drop - LC Sweep

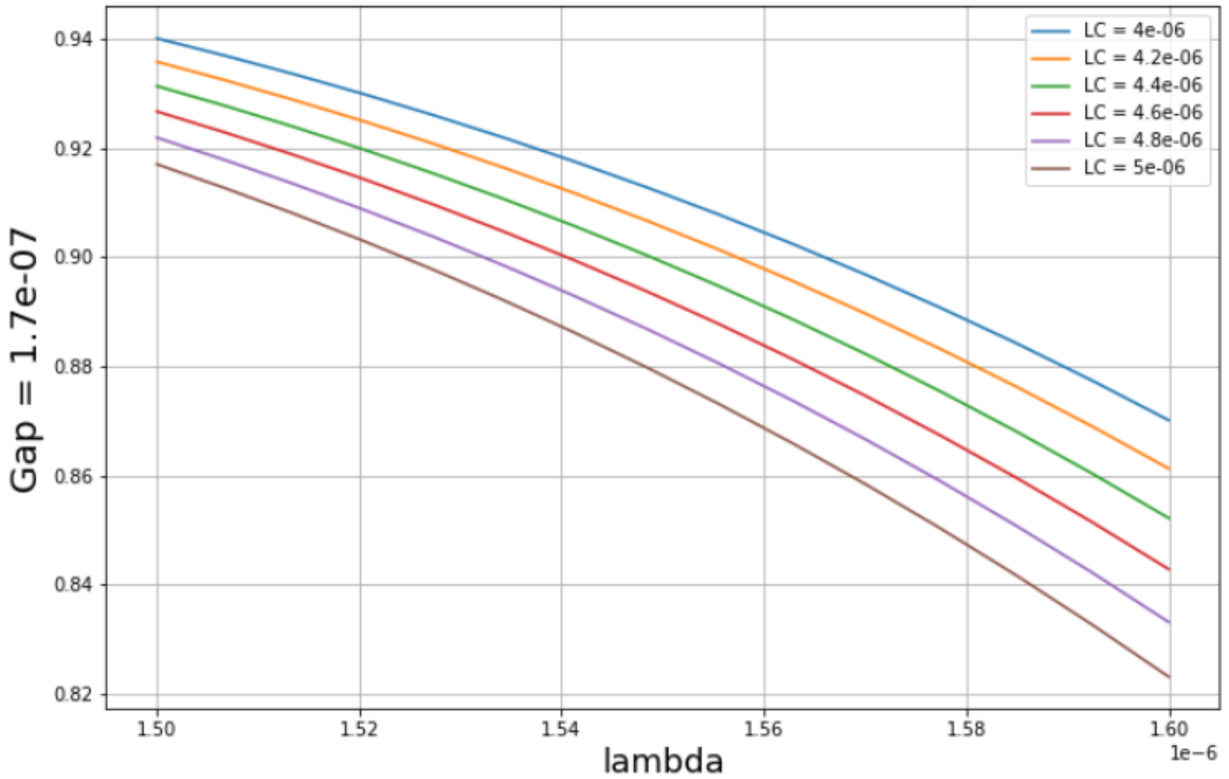




Análise de parâmetros

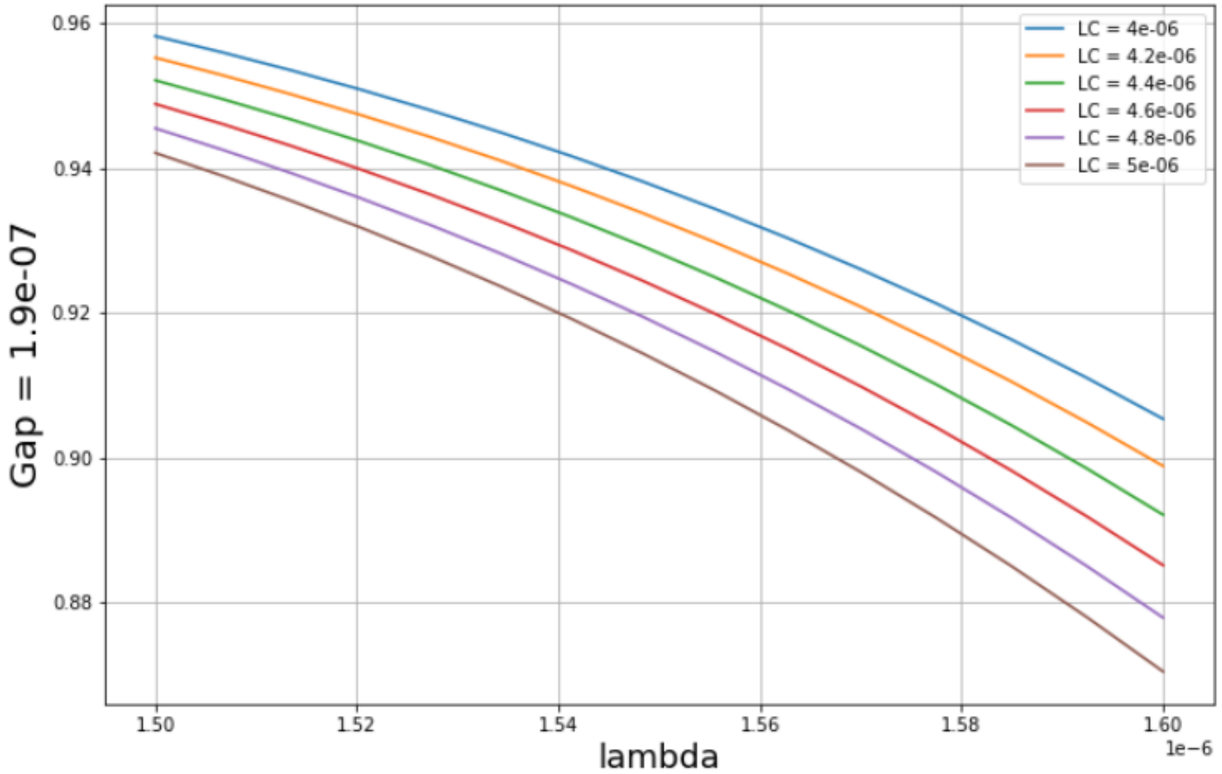
Add-drop - LC & Gap Sweep (pass port)

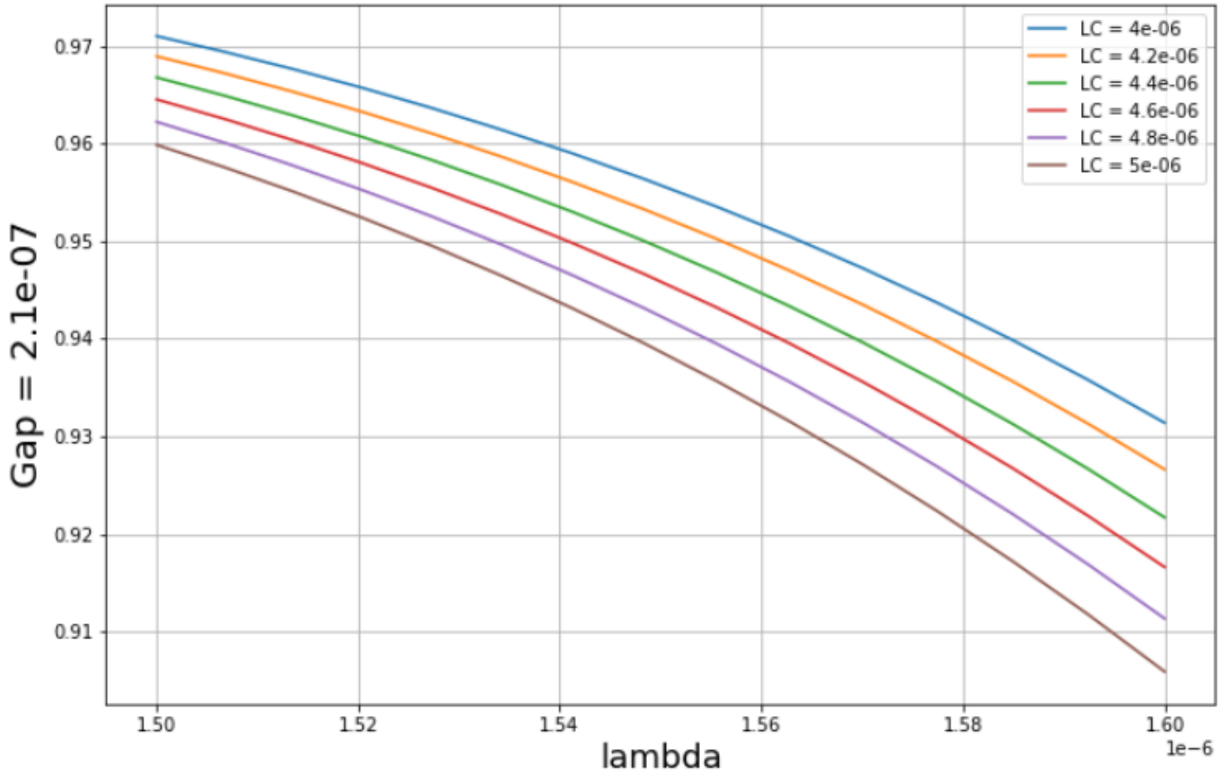




Análise de parâmetros

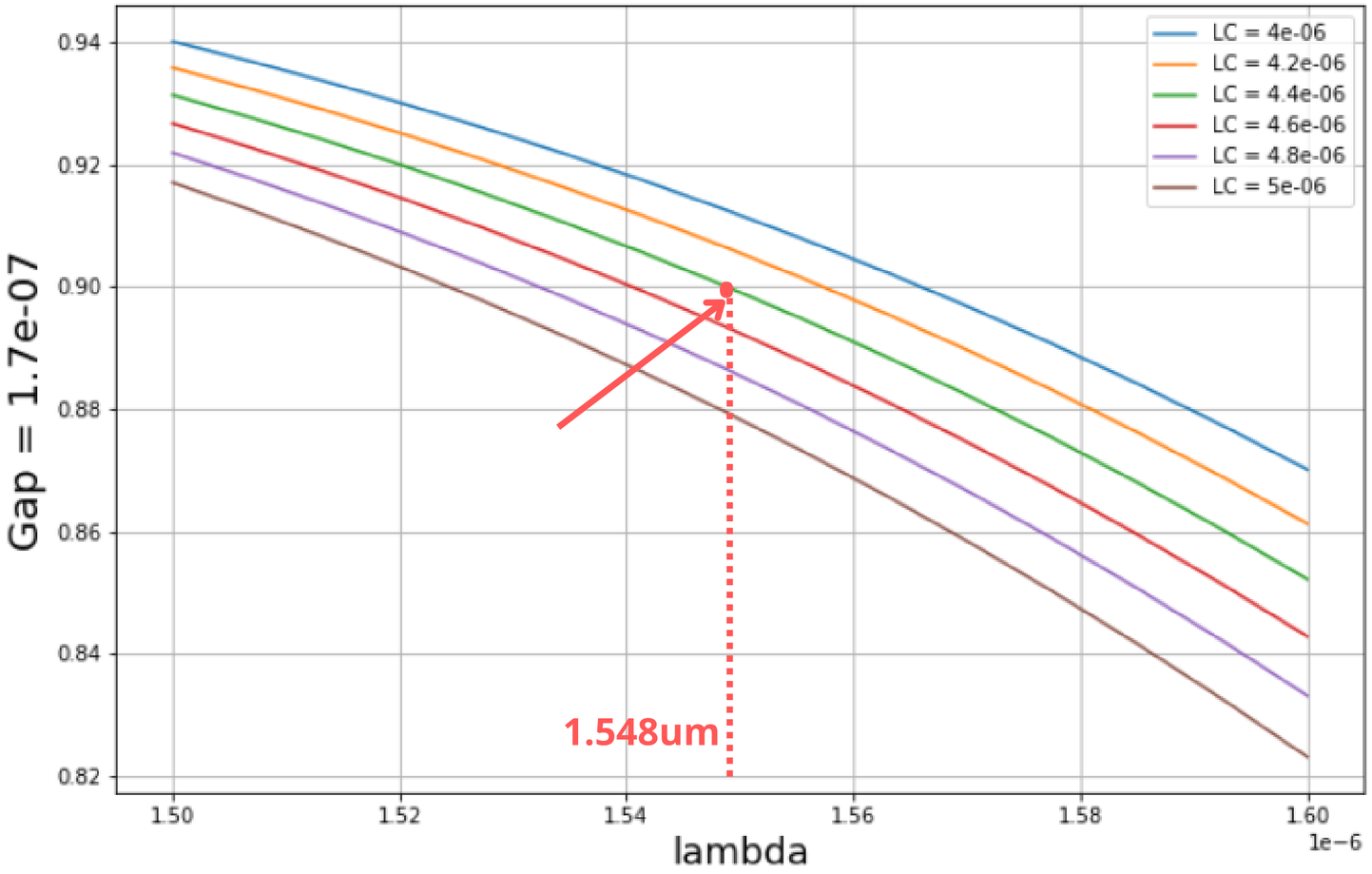
Add-drop - LC & Gap Sweep (pass port)





Análise de parâmetros

Add-drop - LC & Gap Sweep (pass port)



Conclusão:

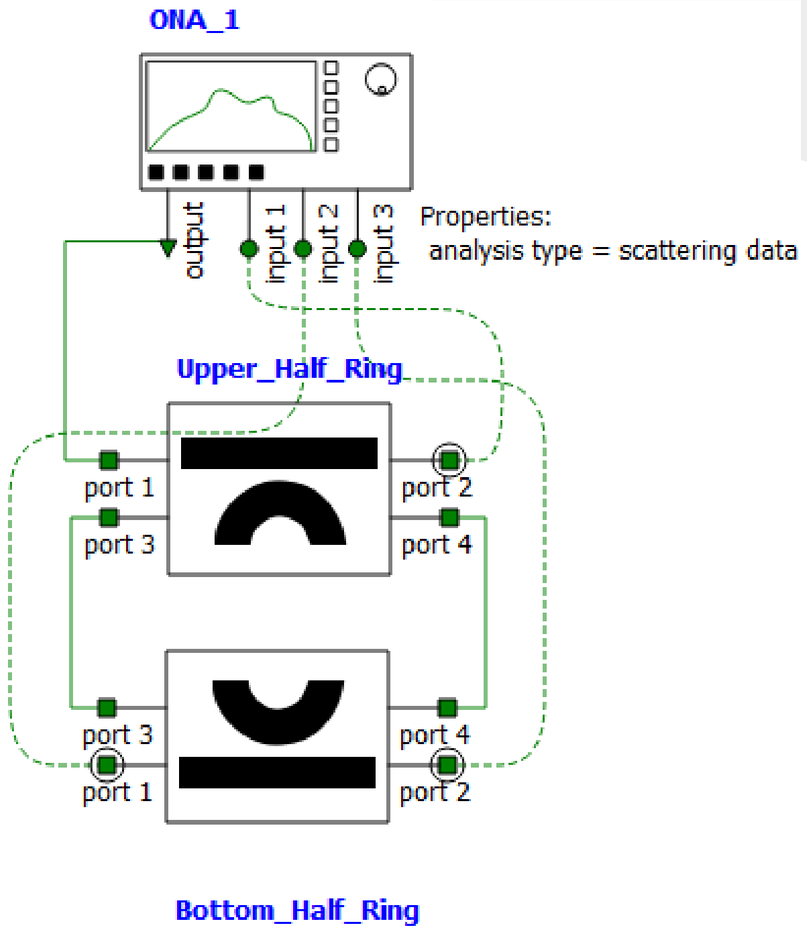
LC escolhido = 4.4um

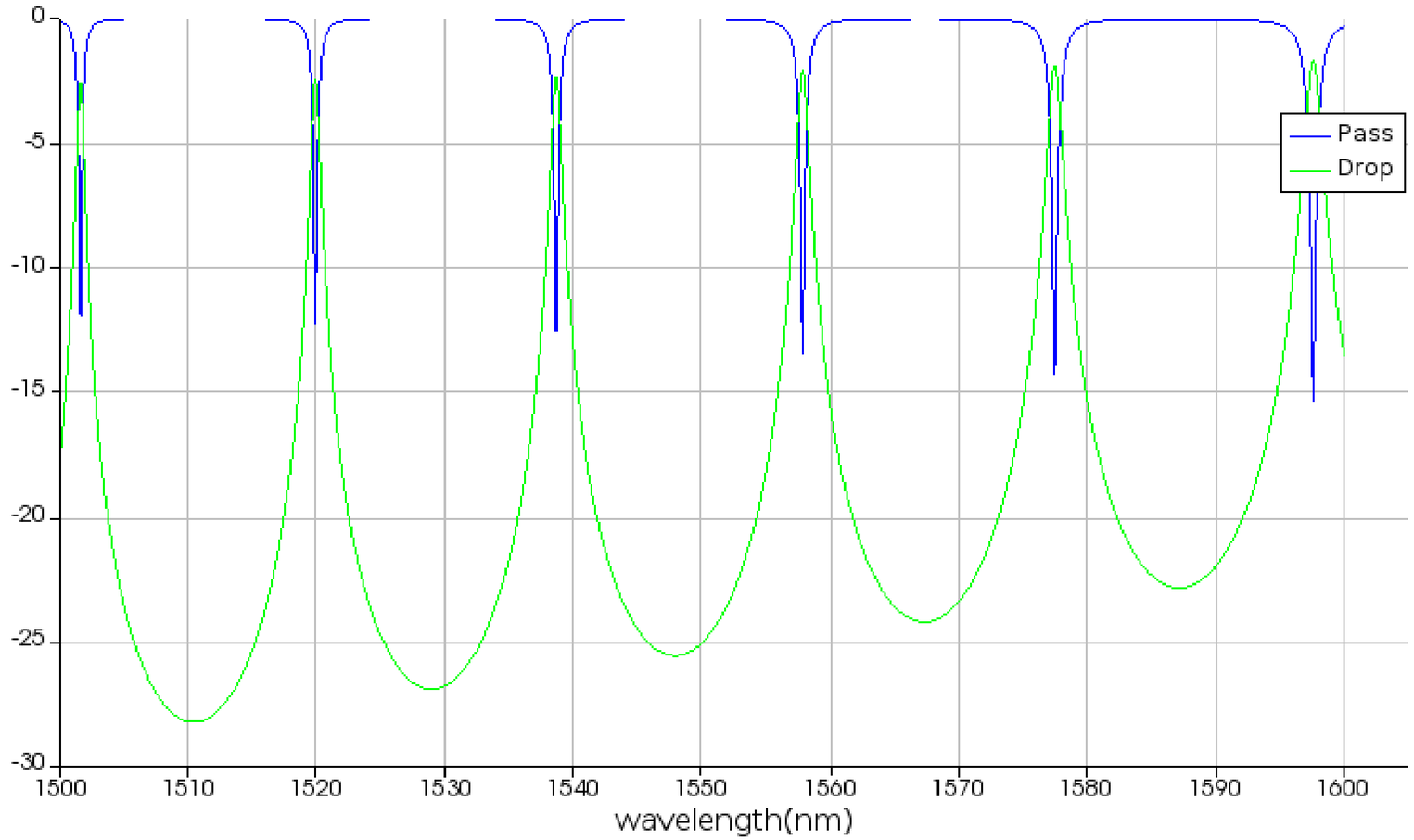
Gap escolhido = 170nm

L total = 30.65um

Simulação de resultados

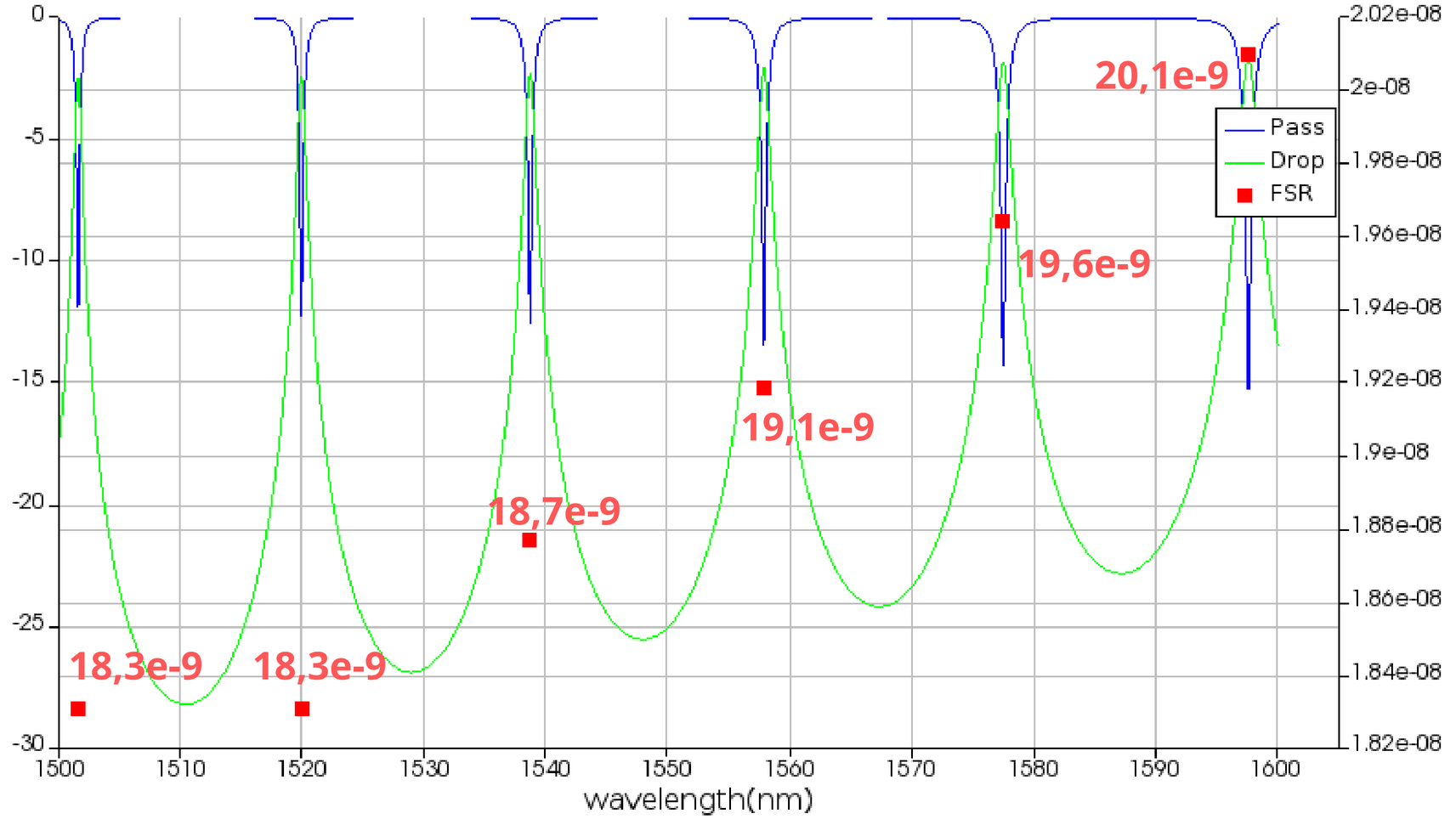
Interconnect Full Ring





Simulação de resultados

Interconnect Full Ring (FSR)

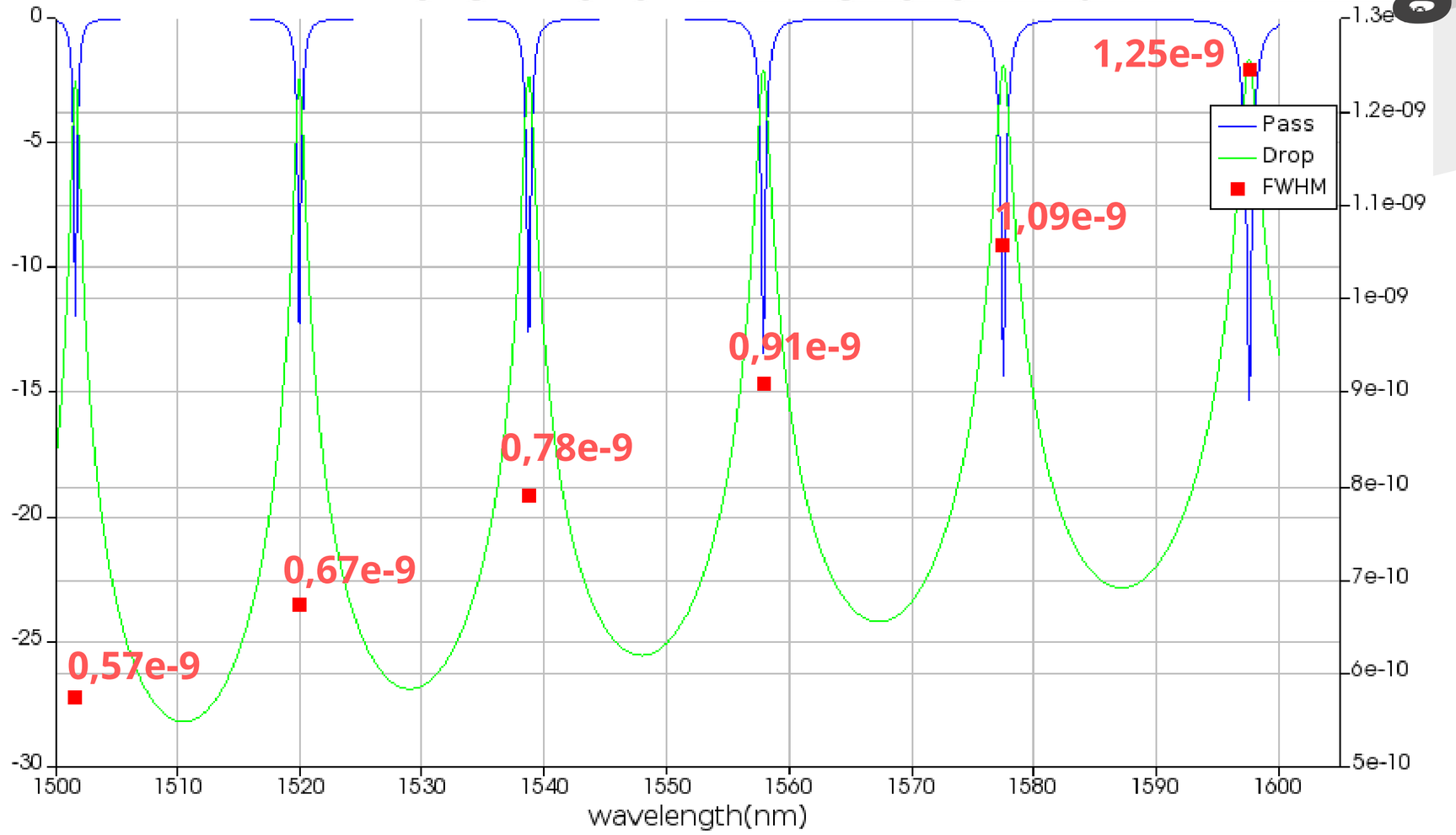


Teórico:

18.5nm

Simulação de resultados

Interconnect Full Ring (FWHM)

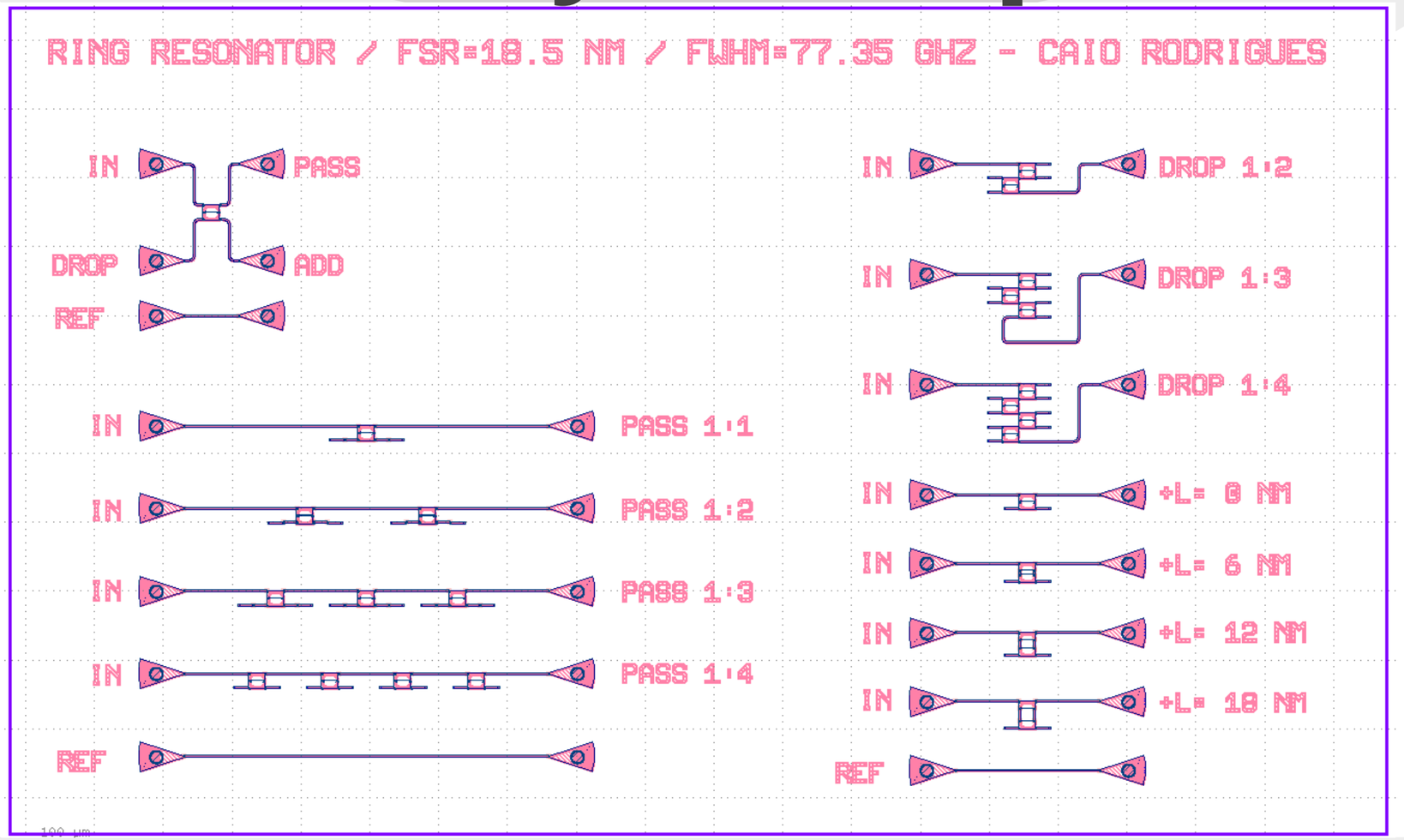


Teórico:

0.62nm

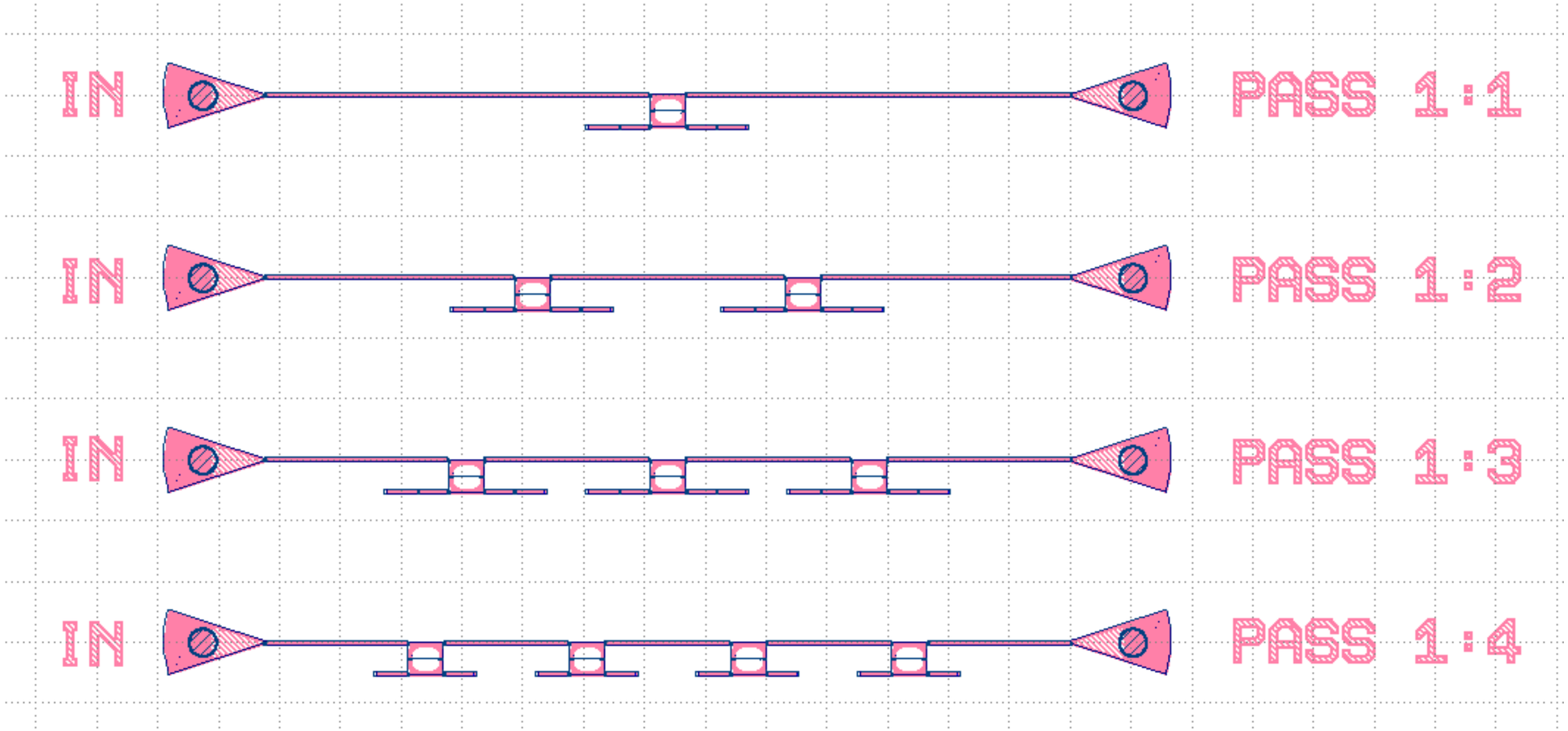
Simulação de resultados

Klayout Chip



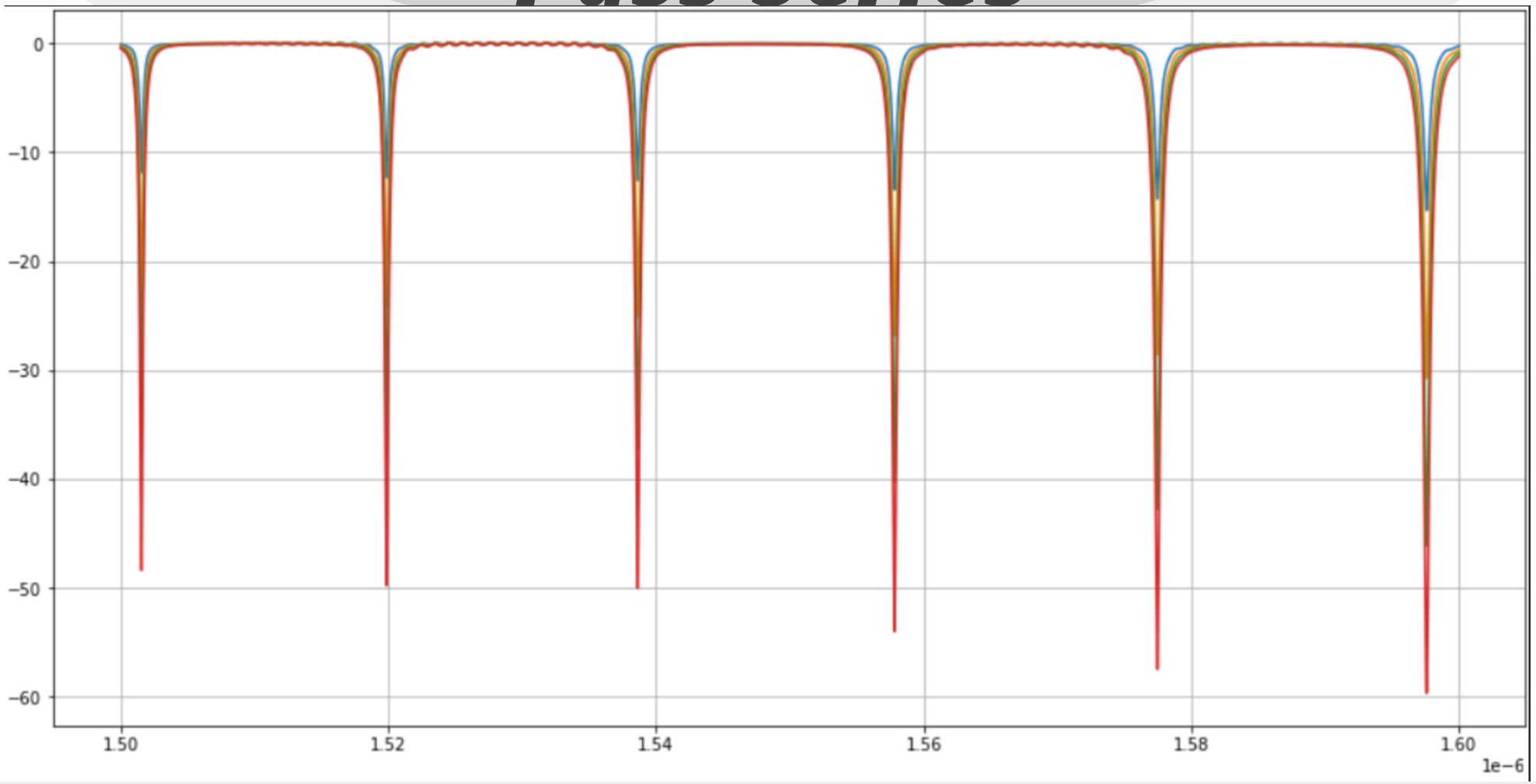
Simulação de resultados

Pass Series



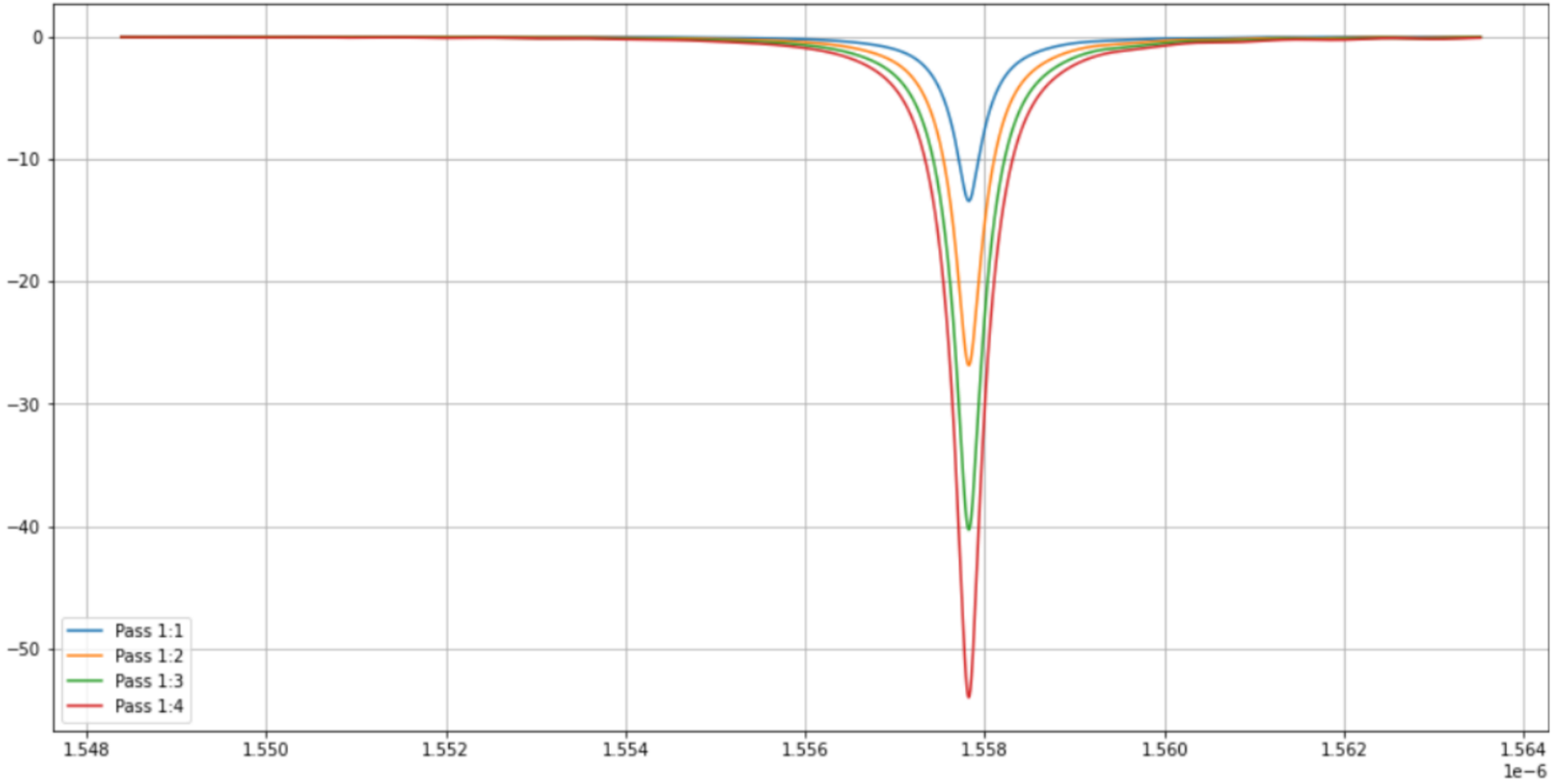
Simulação de resultados

Pass Series



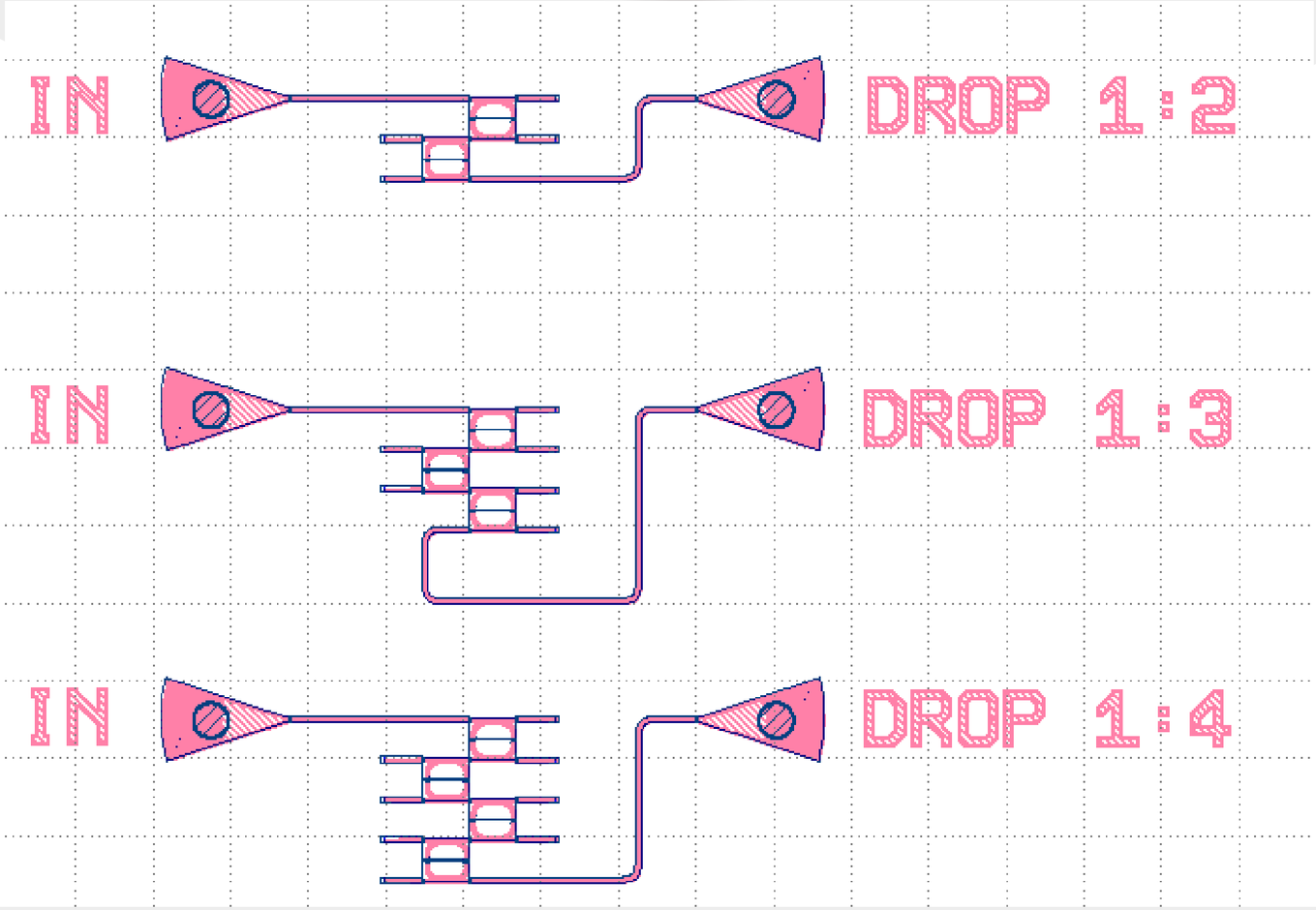
Simulação de resultados

Pass Series



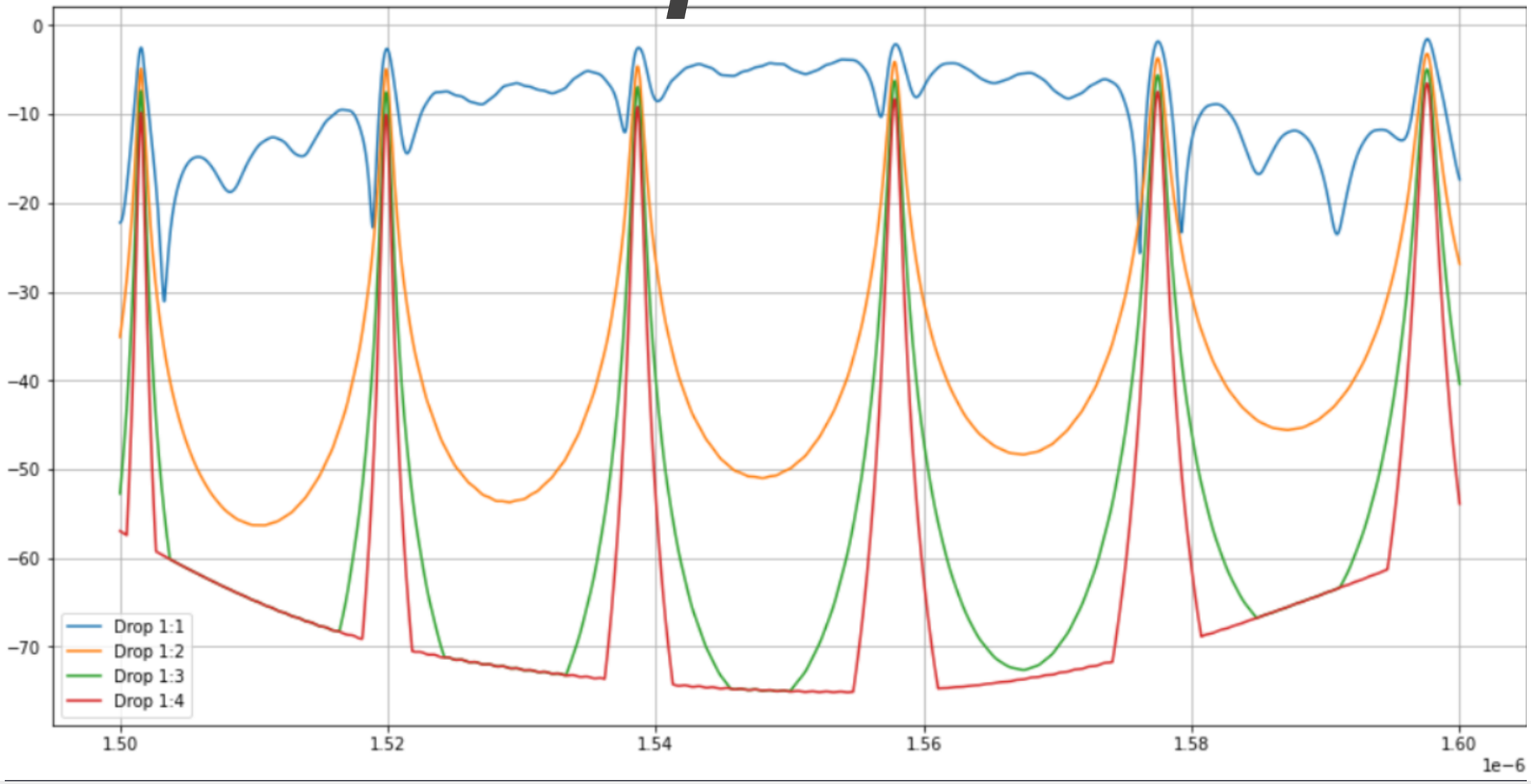
Simulação de resultados

Drop Series



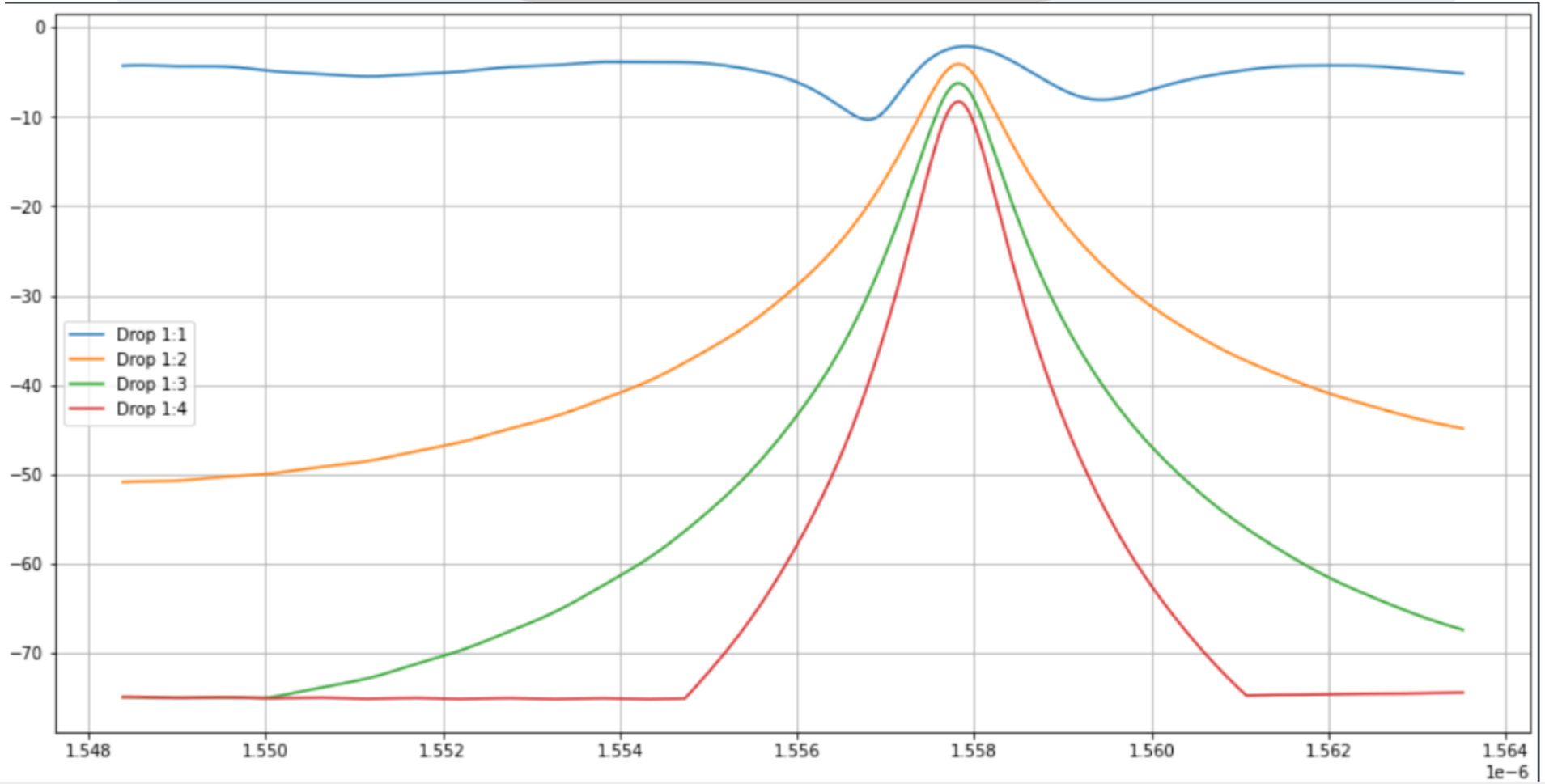
Simulação de resultados

Drop Series



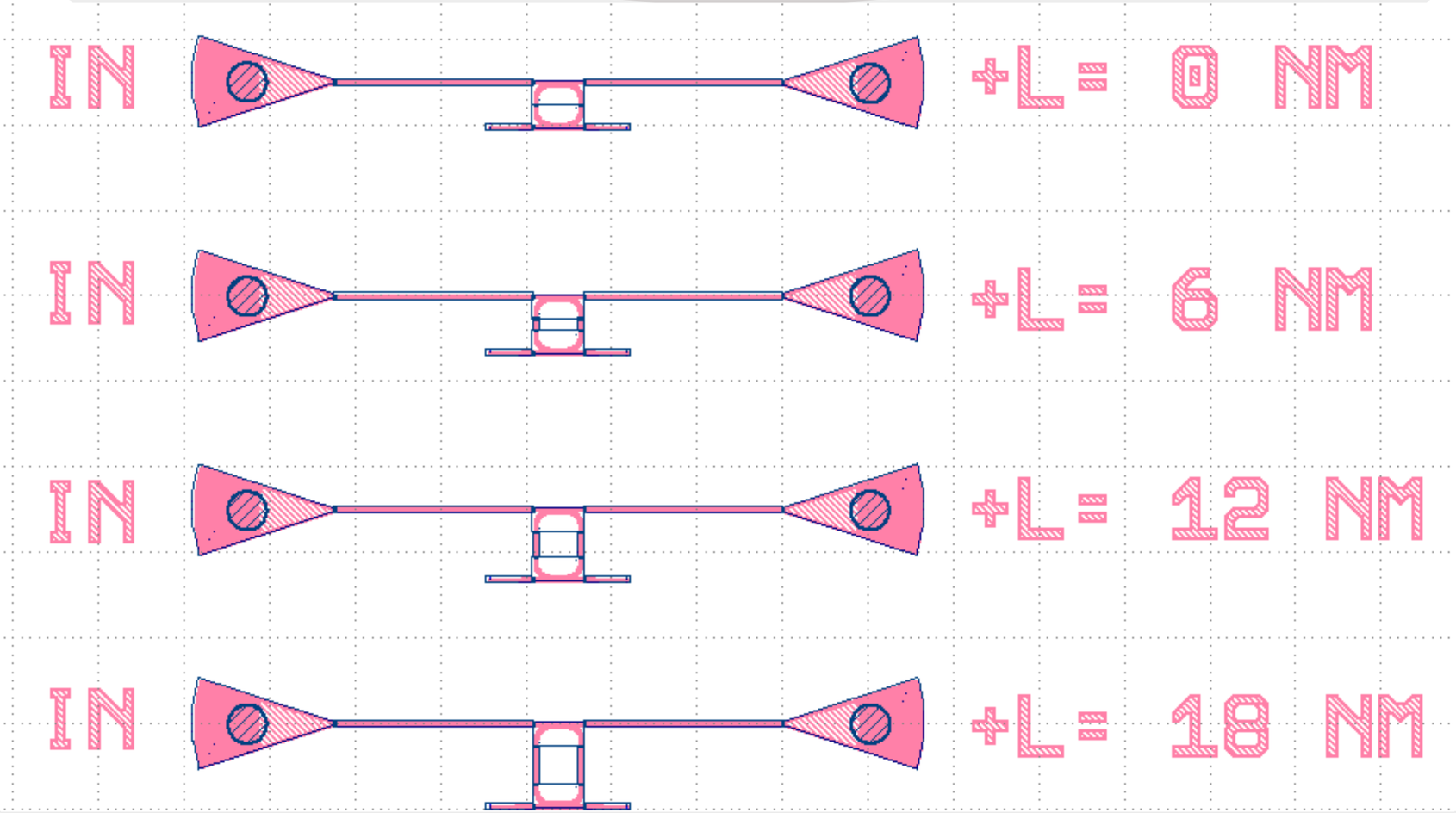
Simulação de resultados

Drop Series



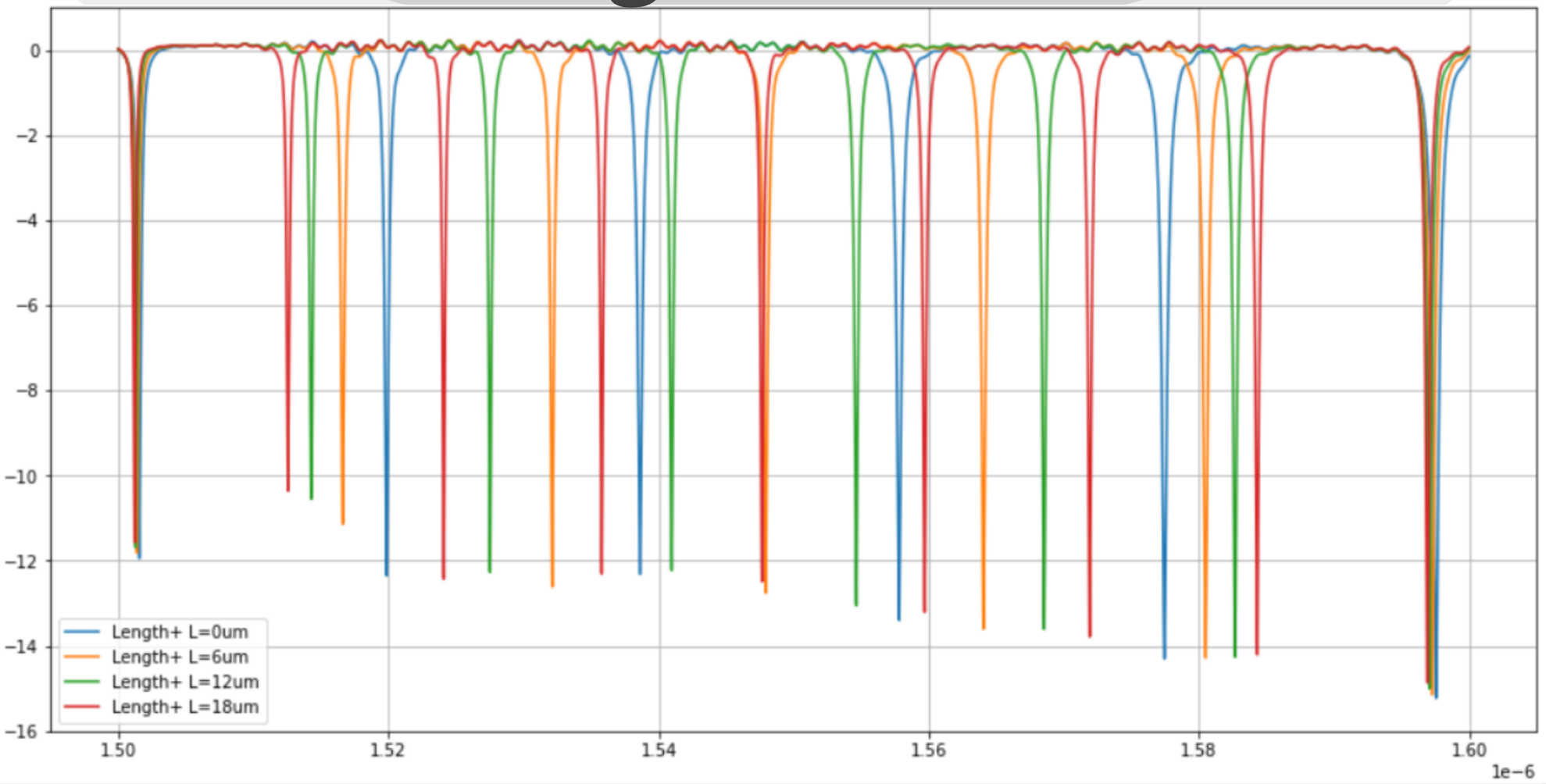
Simulação de resultados

Length Series



Simulação de resultados

Length Series



Conclusão

Valores teóricos

L = 30.589um

r^2 = 0.9001

k^2 = 0.0999

FSR = 18.5nm

FWHM = 0.62nm

Valores simulados

L = 30.65um

r^2 = 0.8997

k^2 = 0.1003

FSR ≅ 18.9nm

FWHM ≅ 0.84nm