

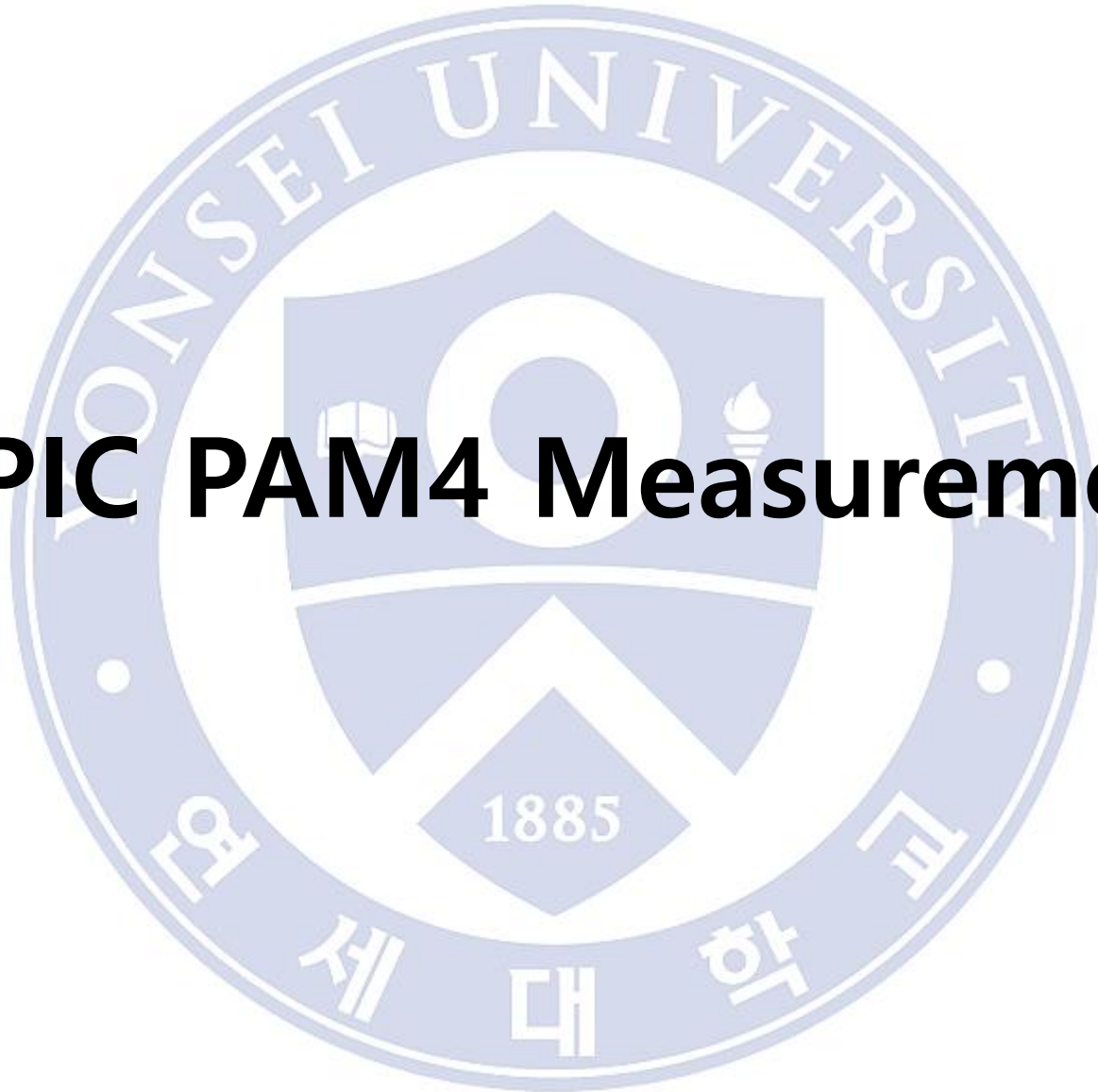
The background features a large, light blue watermark of the Yonsei University logo. The logo is circular with the text 'YONSEI UNIVERSITY' around the top and '1885' at the bottom. In the center is a shield with a book, a lamp, and a central circle.

# 2023 Workshop

**Yongjin Ji**

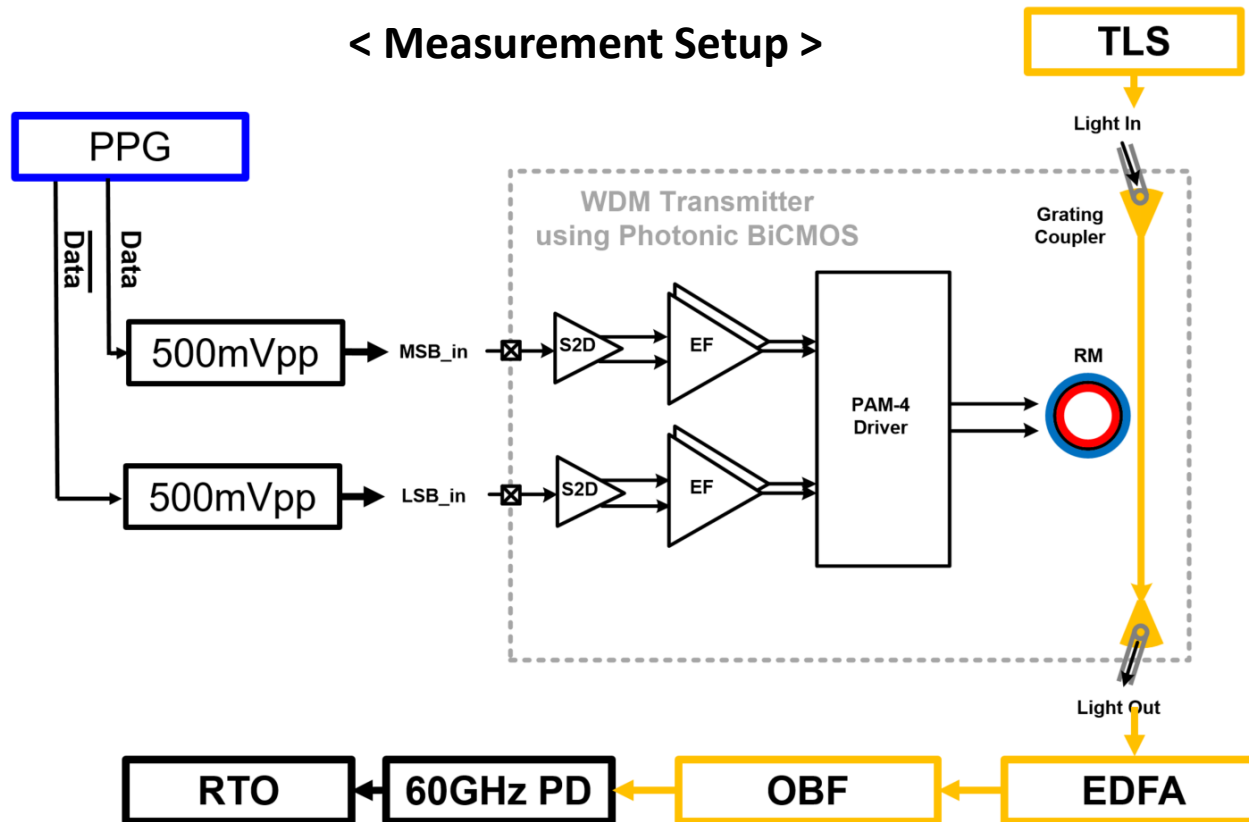
**High-Speed Circuits & Systems Lab.  
Dept. of Electrical and Electronic Engineering  
Yonsei University**

# EPIC PAM4 Measurement



# EPIC PAM4 Measurement

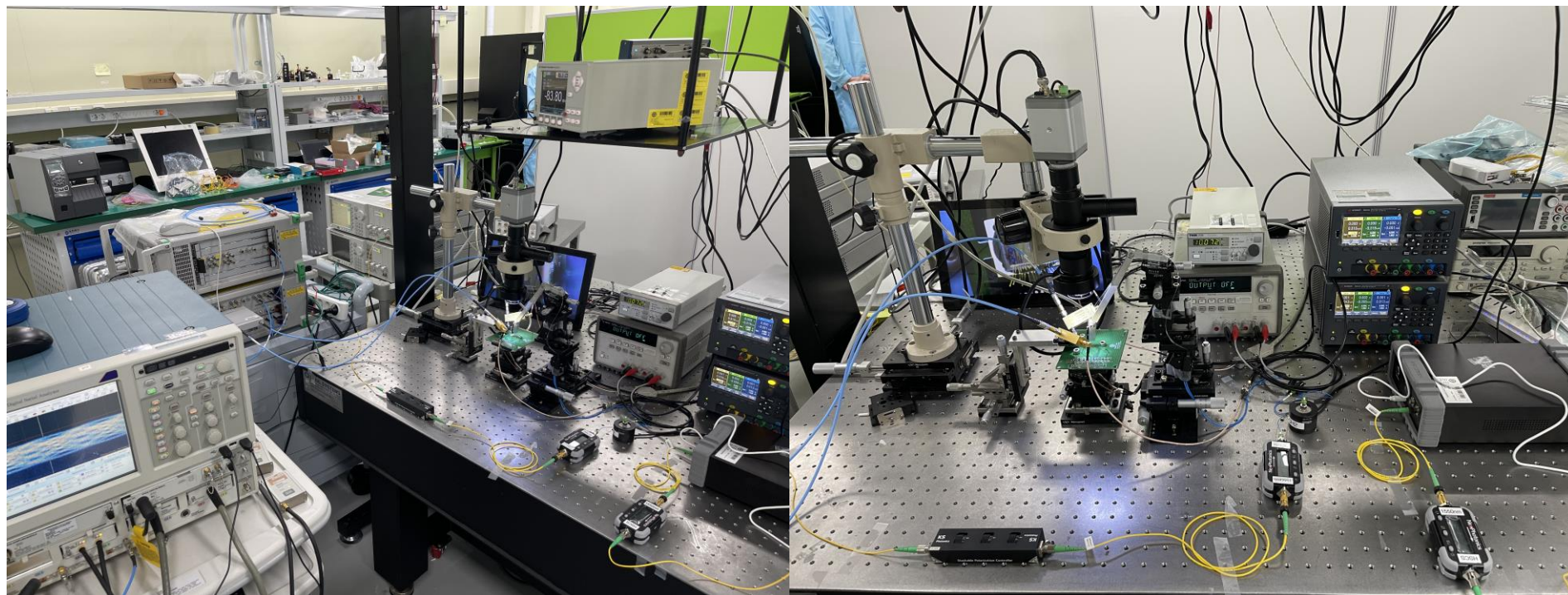
- EPIC : Electric Photonic Integrated Chip
- IHP foundry
- WDM transmitter using photonic BiCMOS (2 channel)



# EPIC PAM4 Measurement Setup

- EPIC : Electric Photonic Integrated Chip
- IHP foundry
- WDM transmitter using photonic BiCMOS (2 channel)

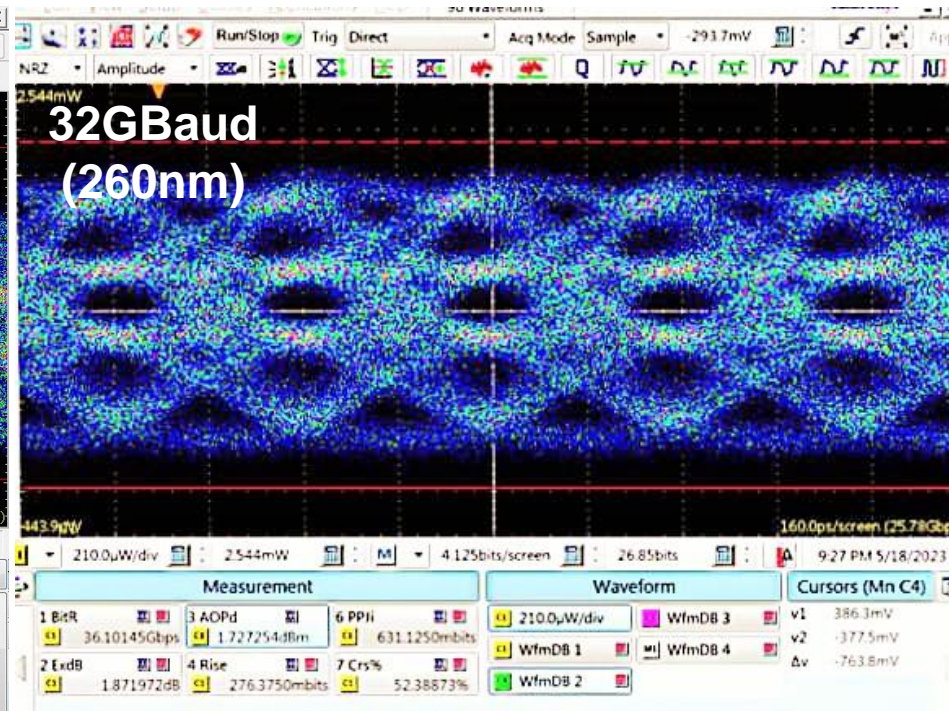
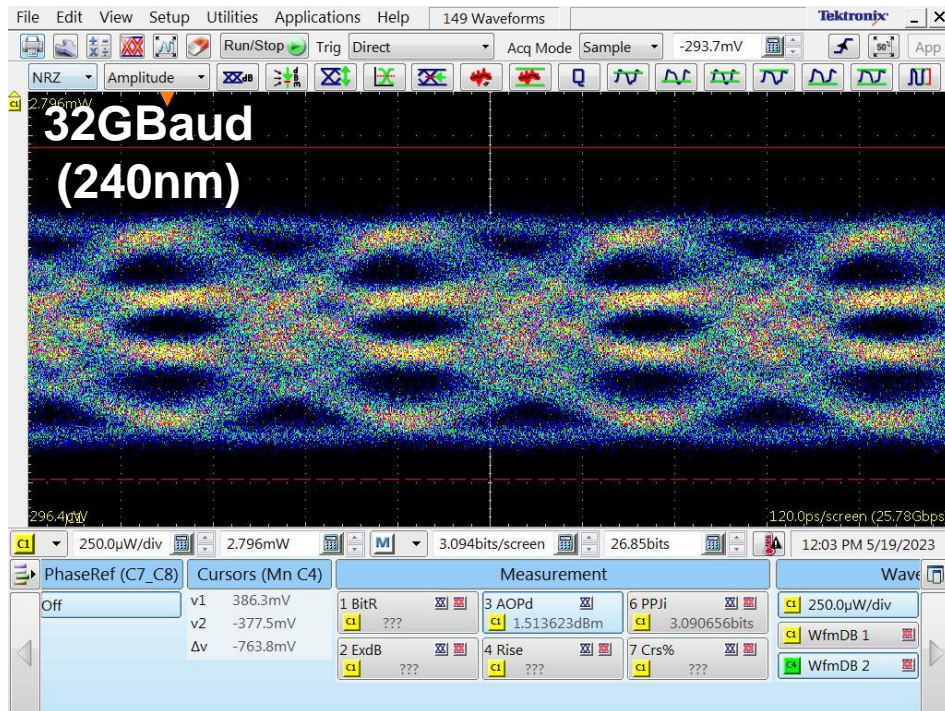
## < Measurement Setup (@ETRI)>



# PAM4 Eye Diagram

- EPIC : Electric Photonic Integrated Chip
- IHP foundry

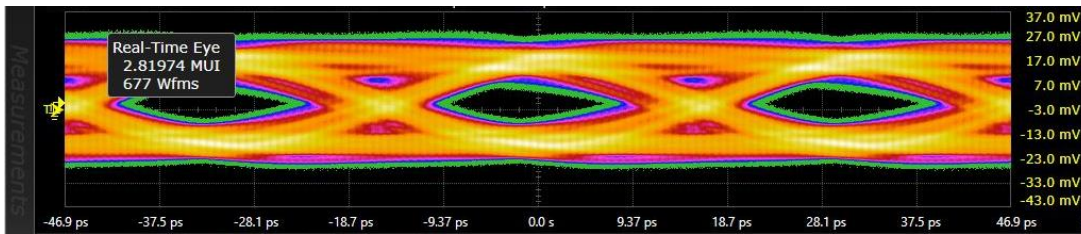
< PAM4 Eye Diagram >



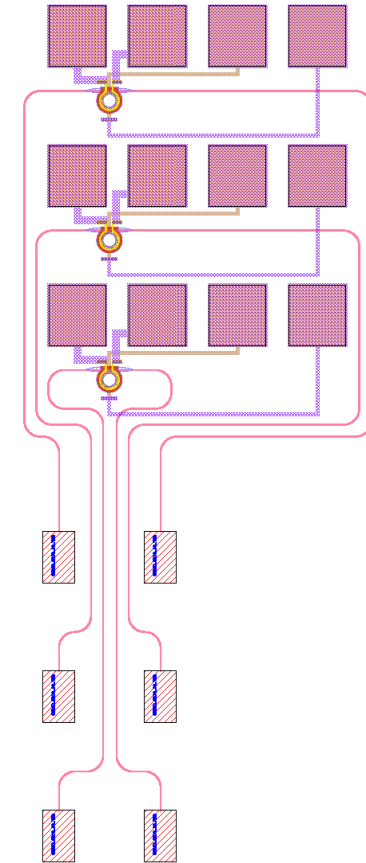
# Future WDM Research & Design

- Optical transmitter (Driver + MRM)
- Optical Receiver (MRR + PD + TIA)
- Optical MUX / DeMUX
- AMF Foundry

Eye Diagram  
32Gbps w/  $2V_{pp}$



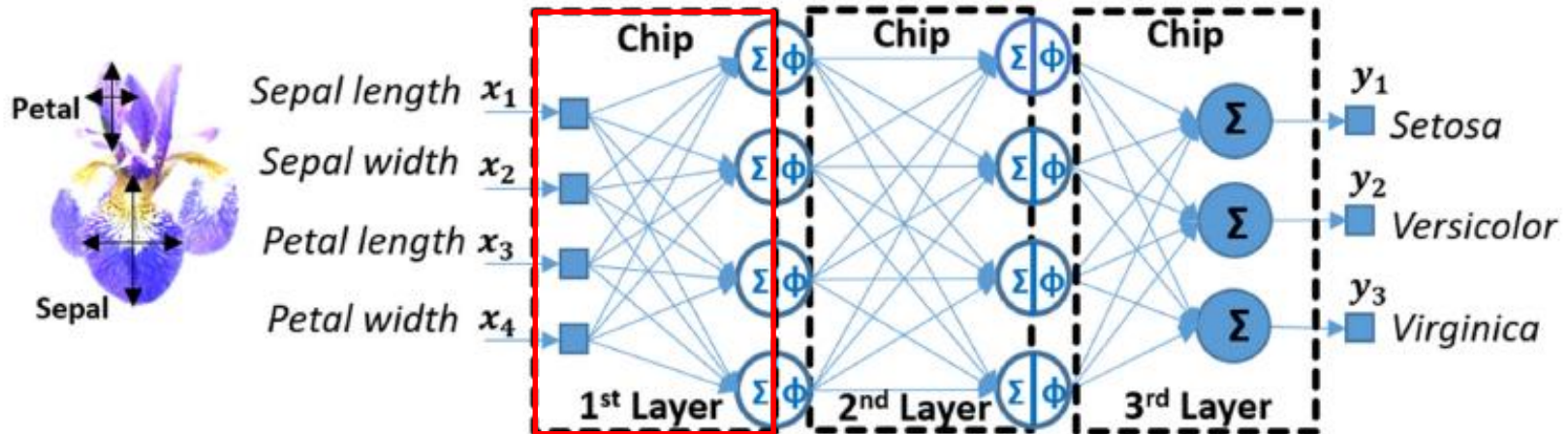
## Micro-ring Modulators



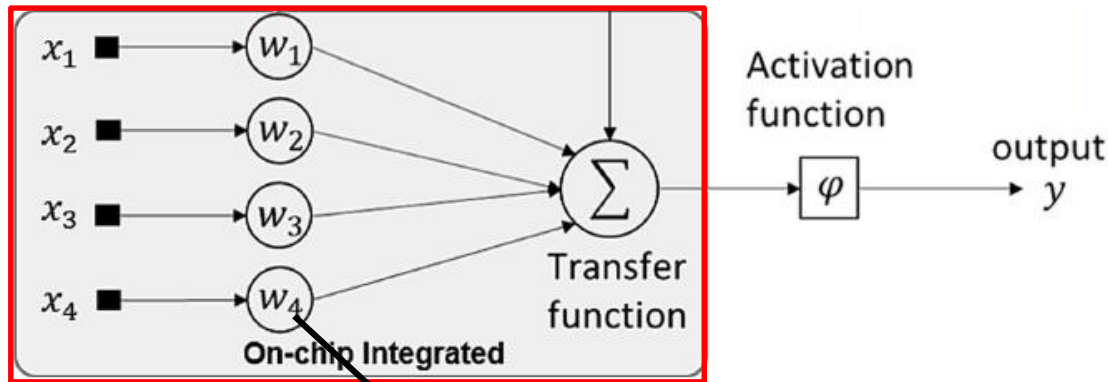
The background features a large, light blue watermark of the Yonsei University logo. The logo is circular, with the text 'YONSEI UNIVERSITY' in the upper half and '연세대학교' in the lower half. In the center is a shield with a book, a lamp, and a bell, with the year '1885' at the bottom.

**Micro-Ring Resonator  
Weightbank Accelerator**

# Neuromorphic Architecture



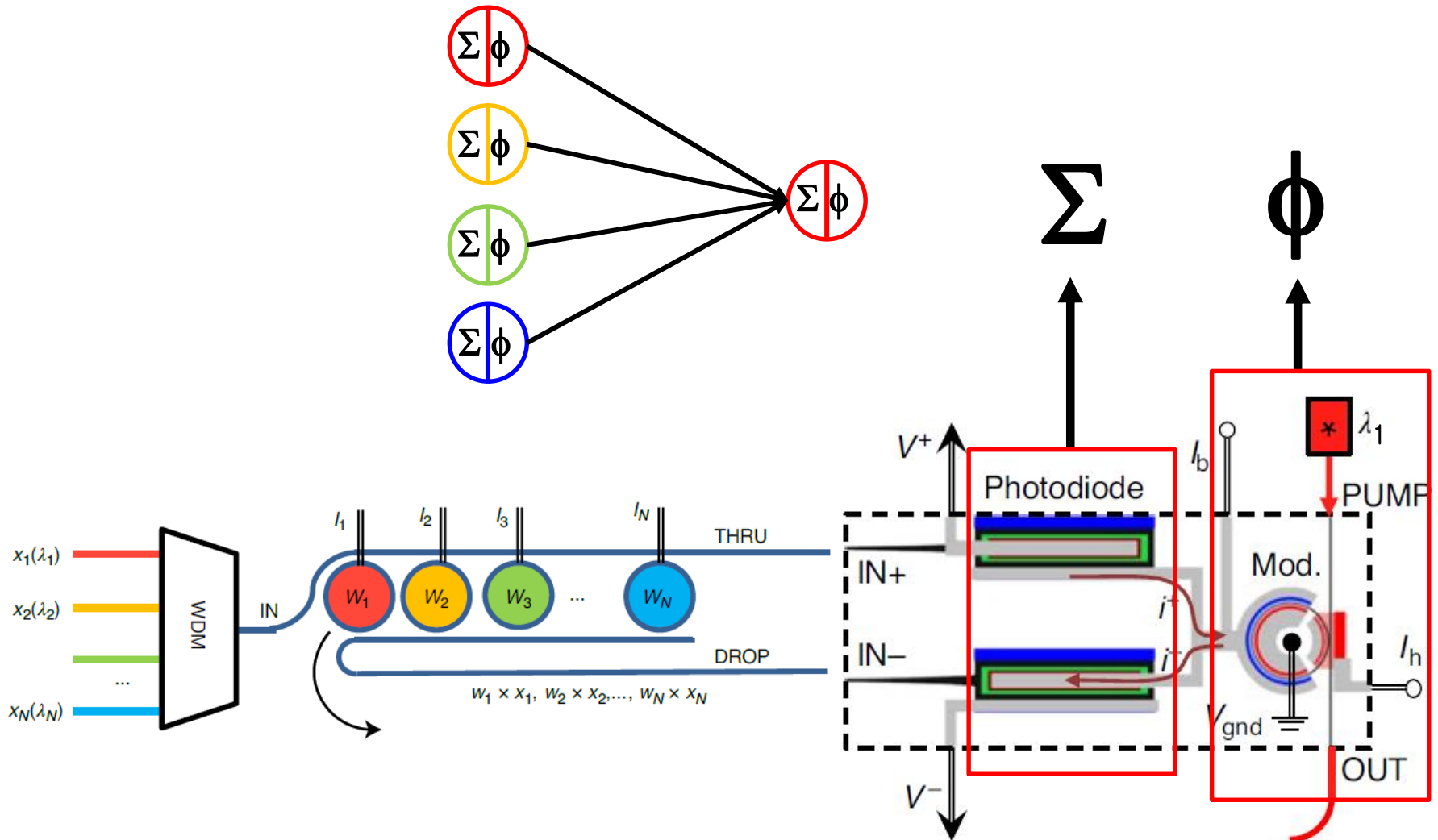
Weight Bank



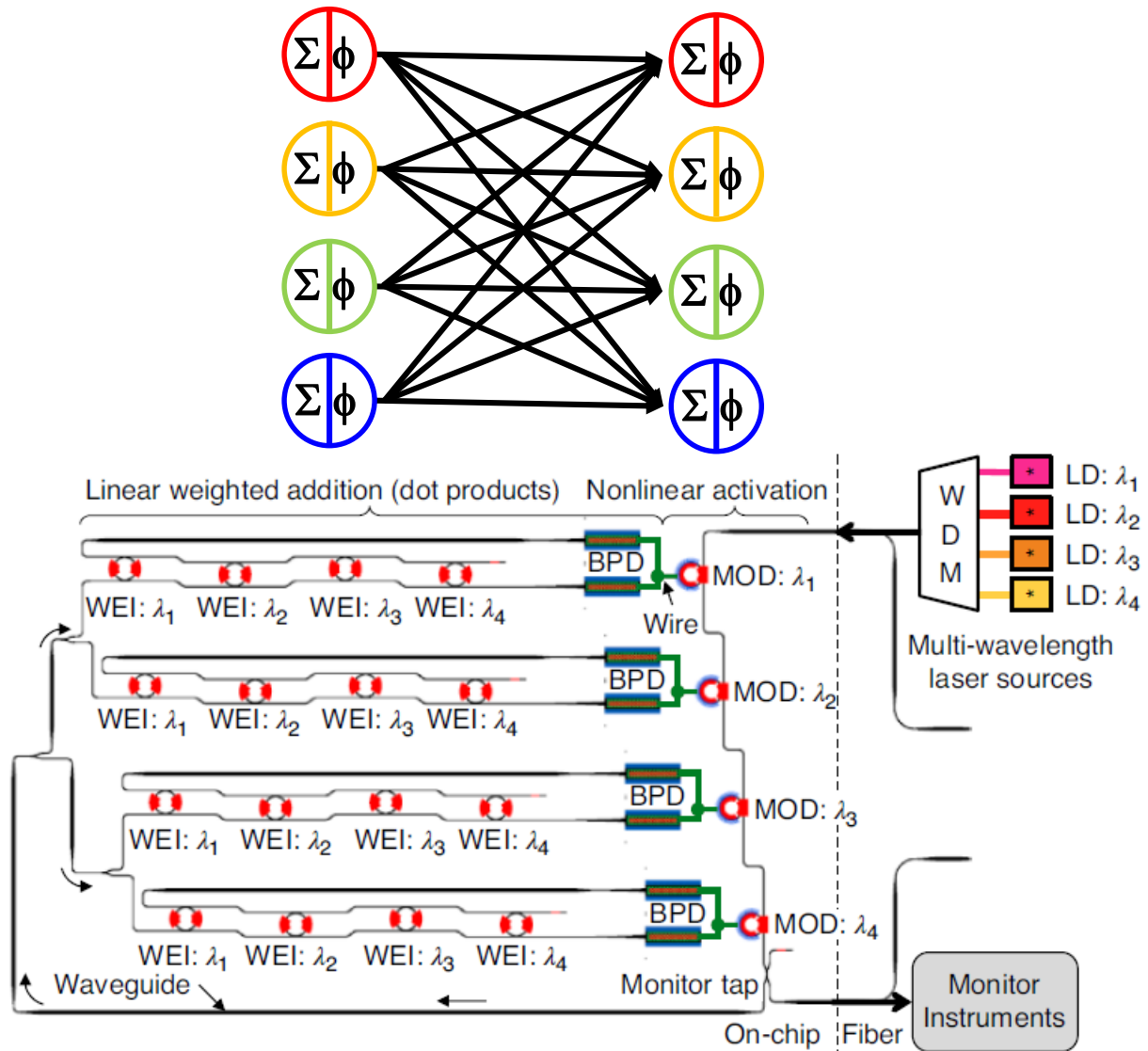
weight range :  $-1 \sim 1$  [a.u.]



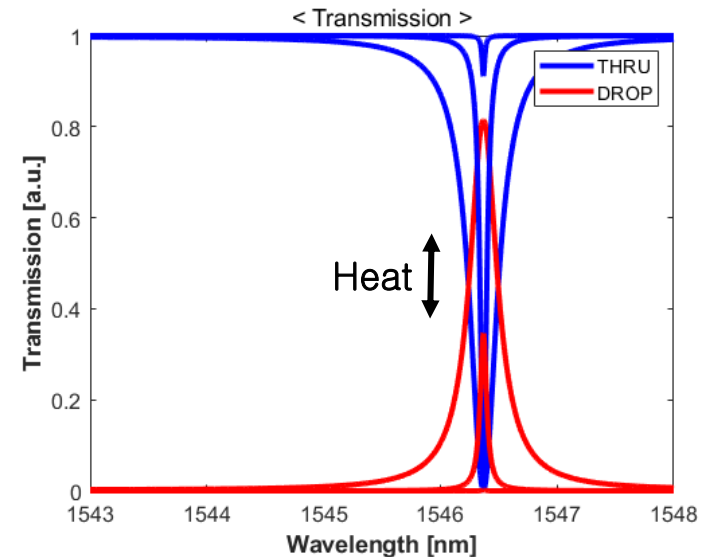
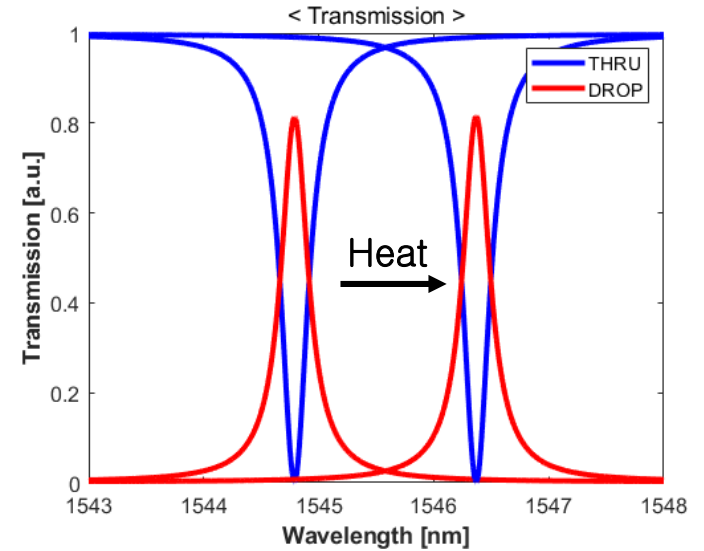
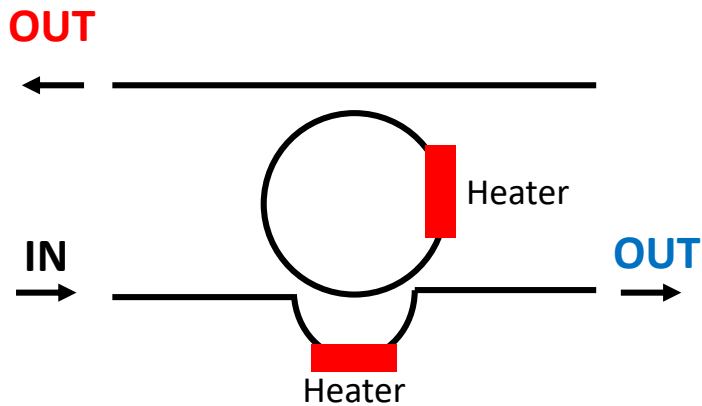
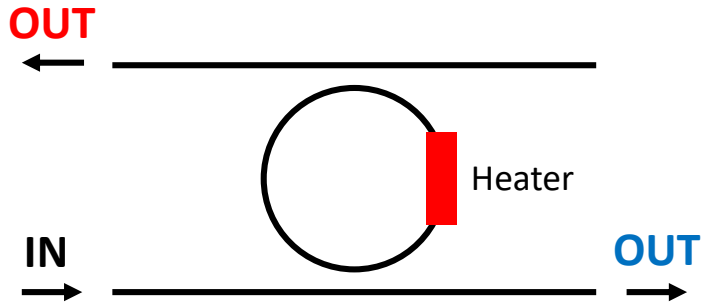
# Weight Bank (1)



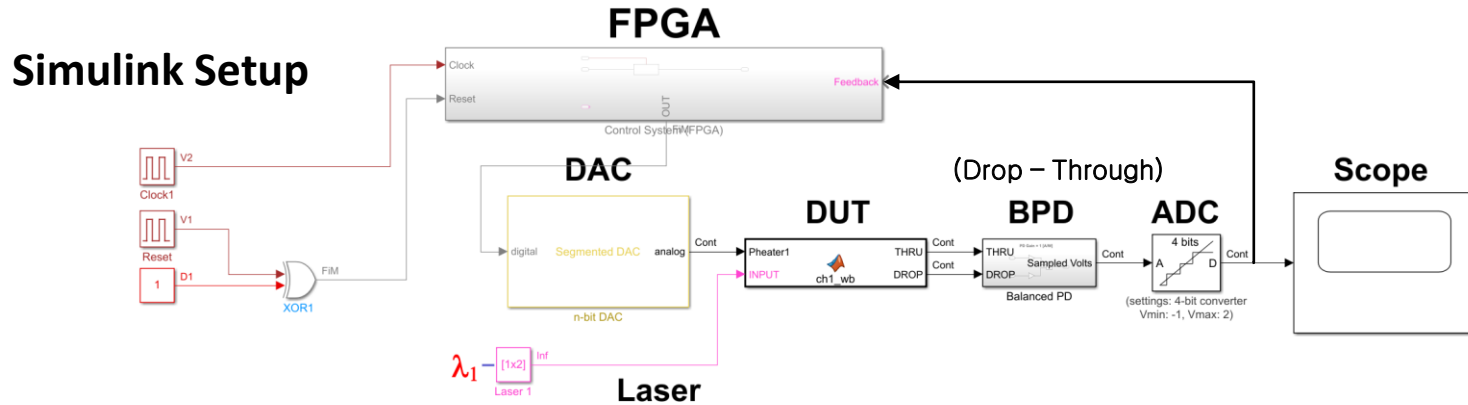
# Weight Bank (2)



# Coupling Variable Weightbank



# High-Channel Density Weightbank w/ Self Calibration



## Heater Sweep

