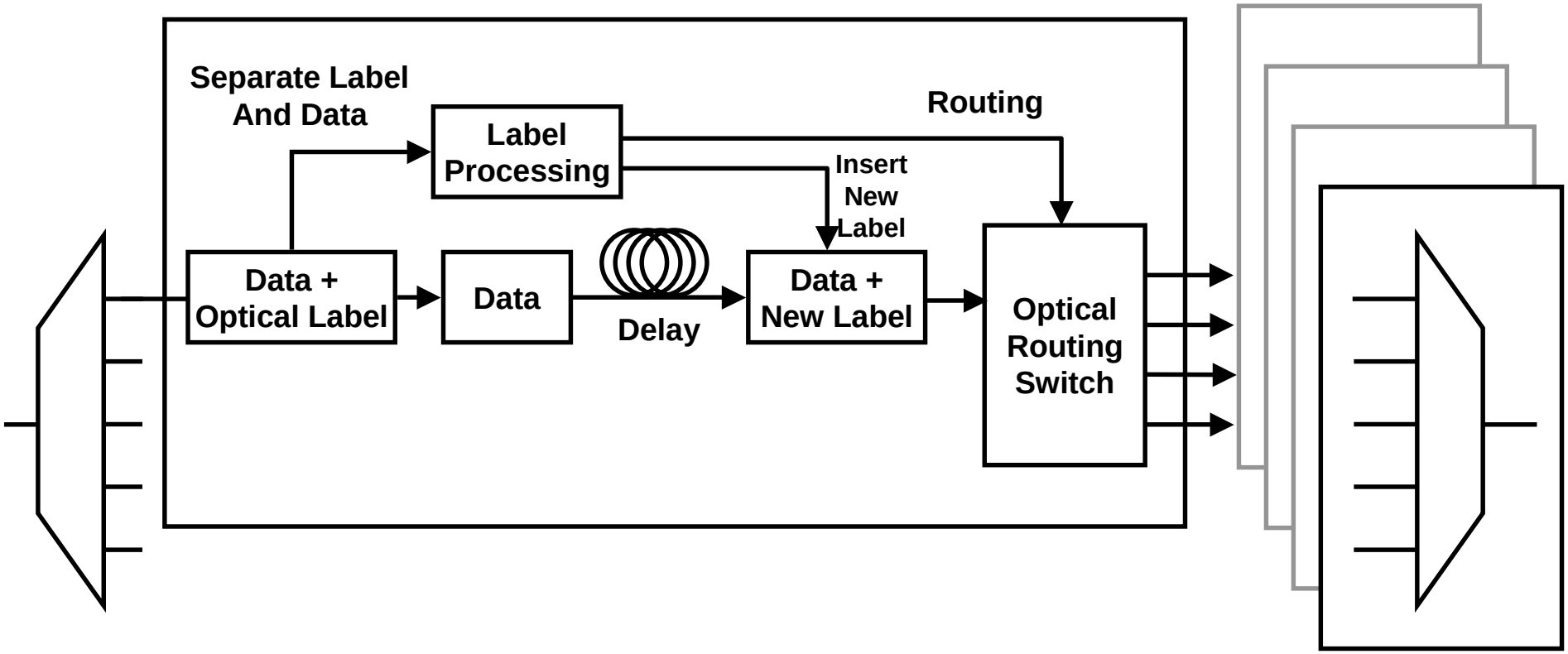
Data in Optical Domain

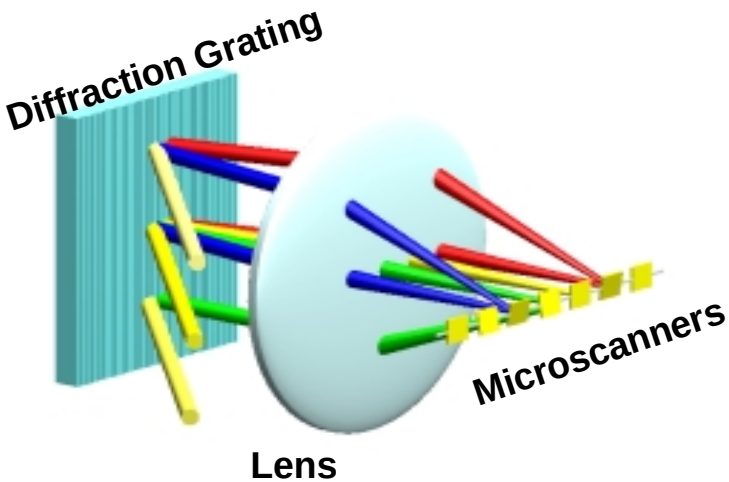


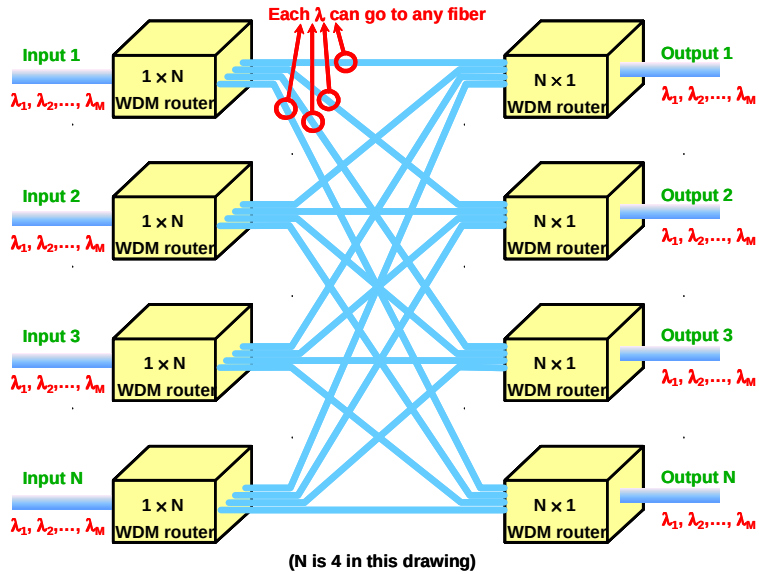
- Must be processed at wavelength level
- A large number of units

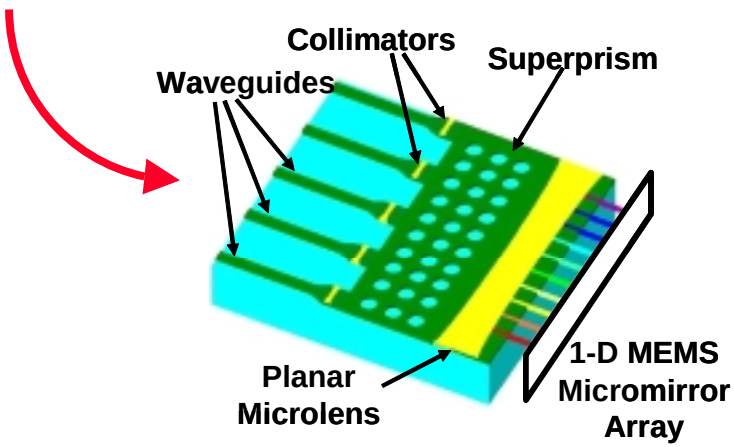
→ Compact components

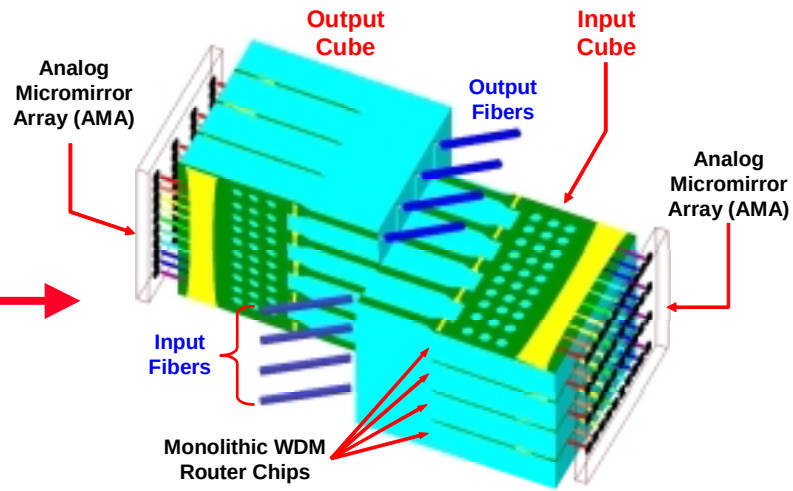
→ Monolithic integration

NxN Wavelength-Selective Crossconnect in a Cube



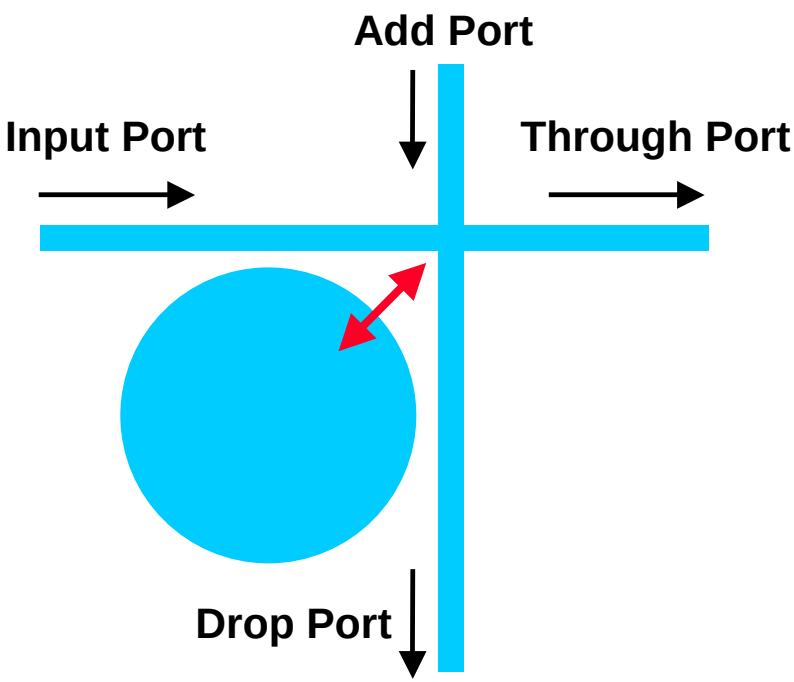




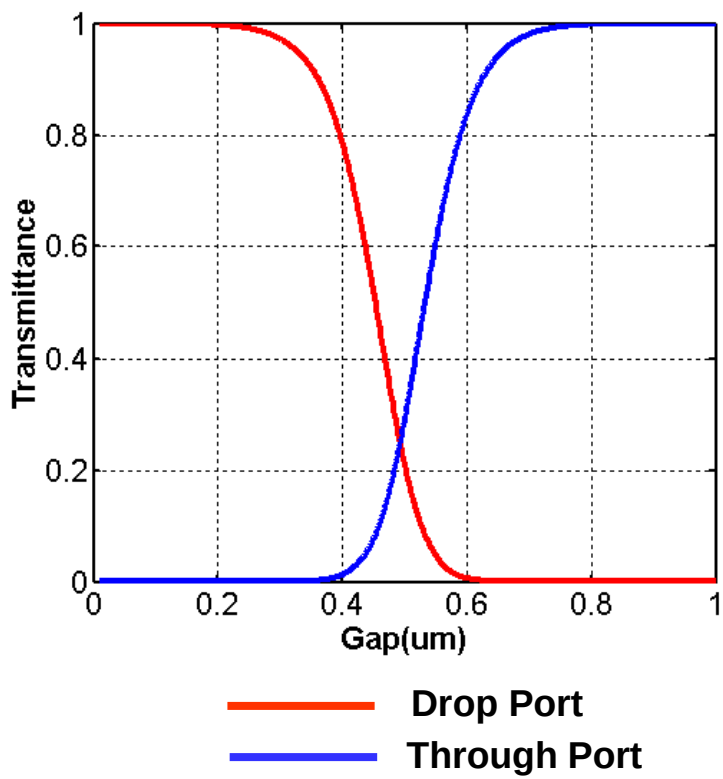


Supported by CS-WDM

Microdisk Resonators
with Variable Coupling Strength



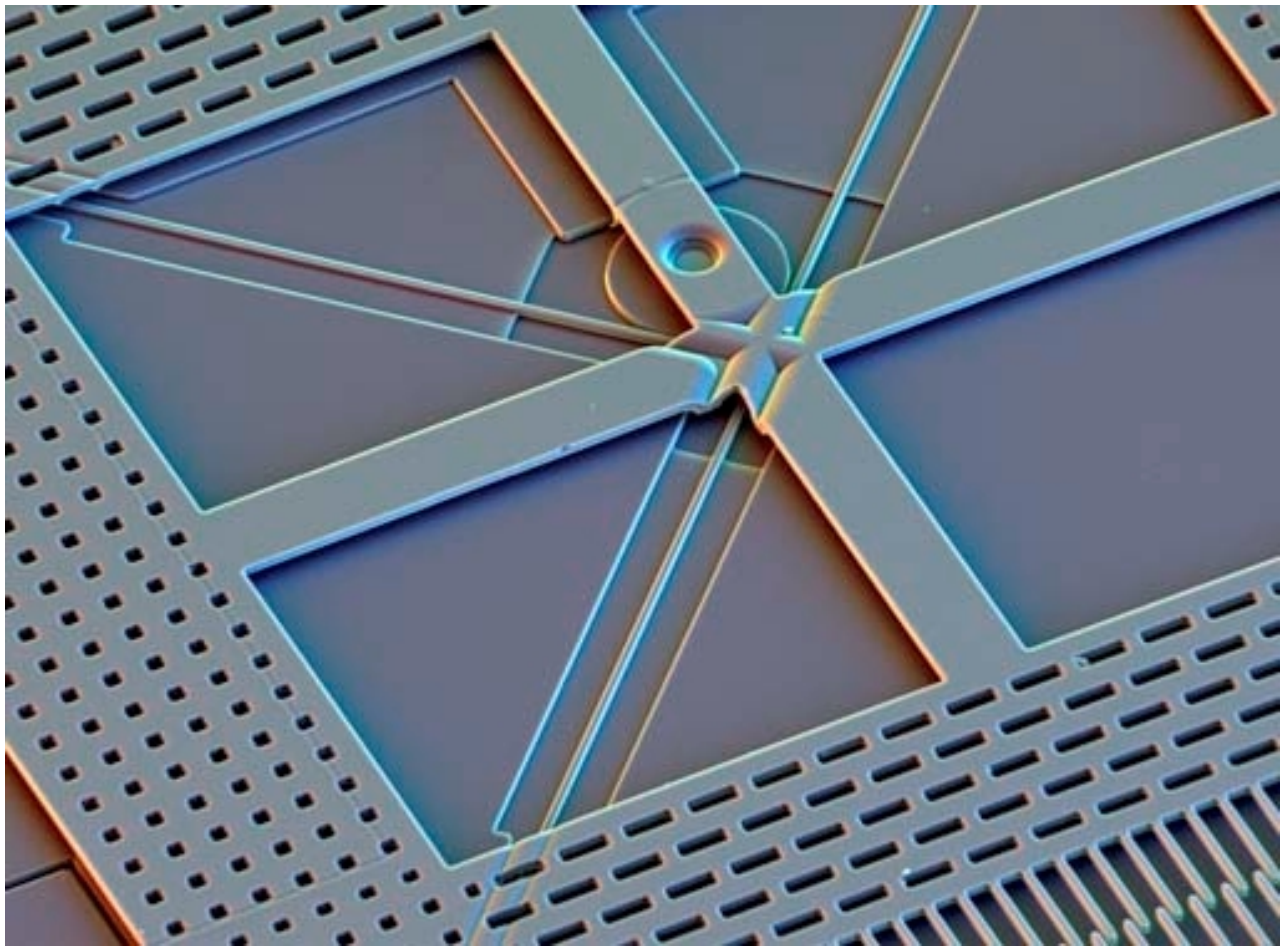
Calculated Transfer Curve With Intrinsic Q = 10^8



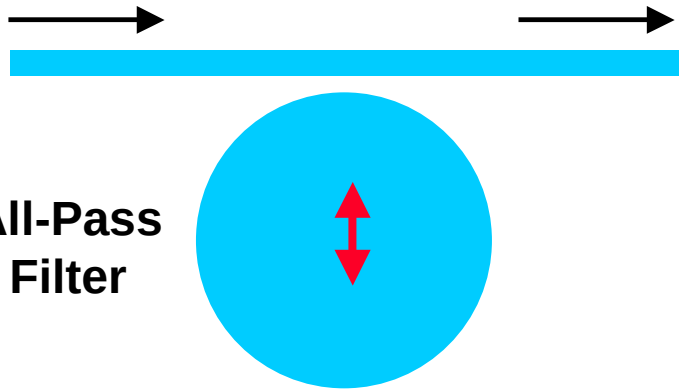
Critical Issues:

- **High Q (10^8 demonstrated by Caltech)**
- **Control of coupling**

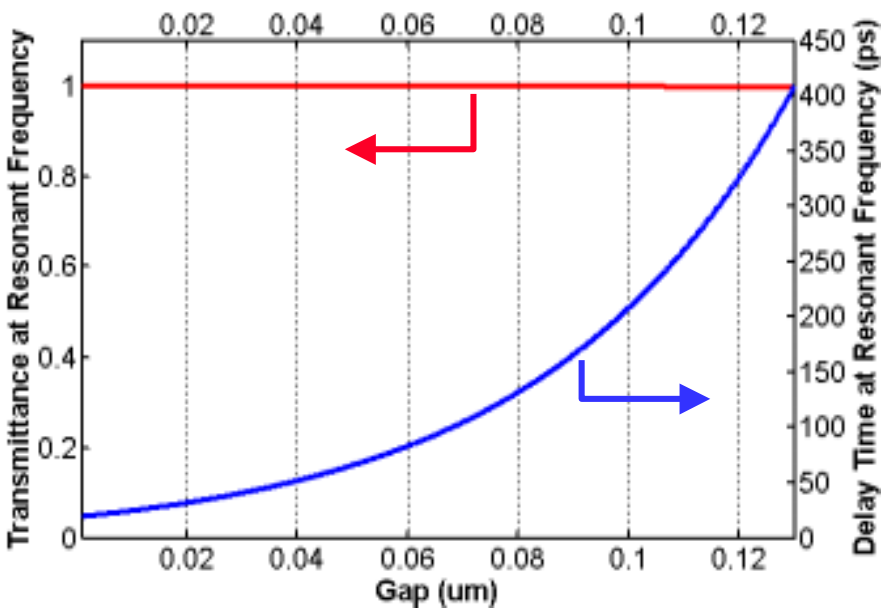
SEM of Microdisk WADM

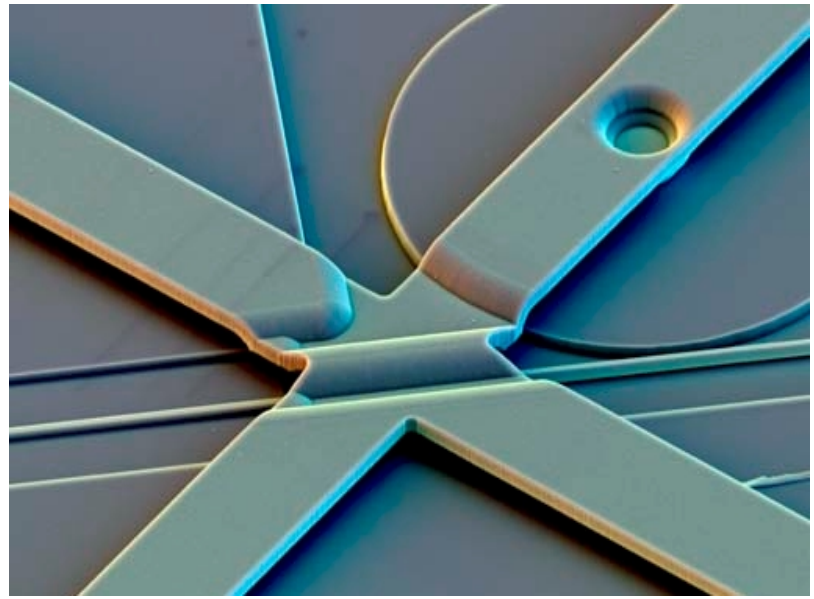


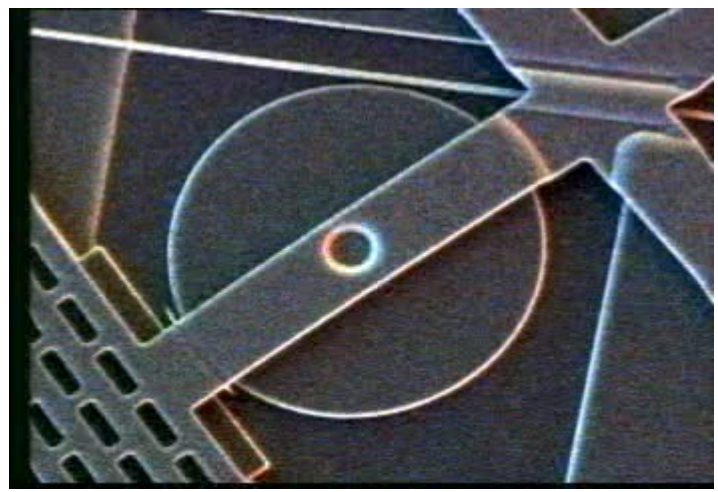
Compact Tunable Delay Lines



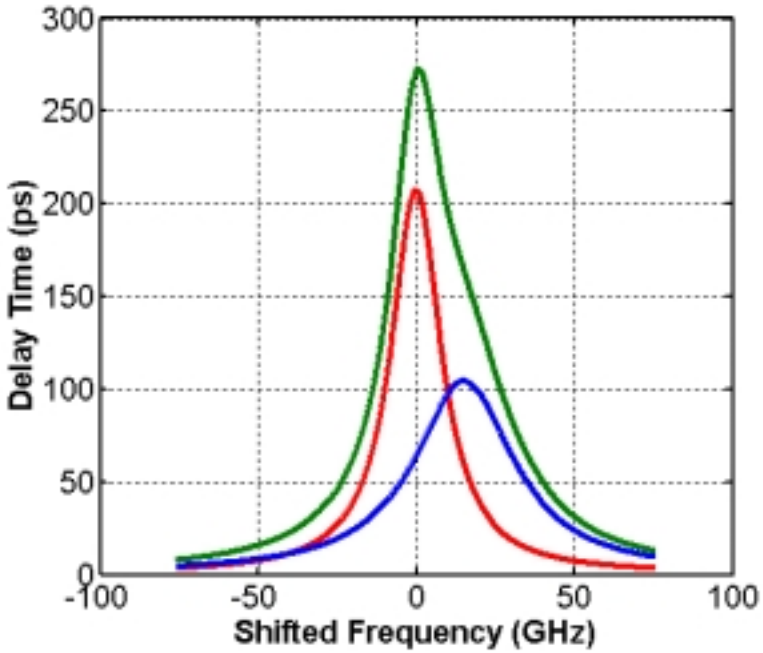
All-Pass Filter







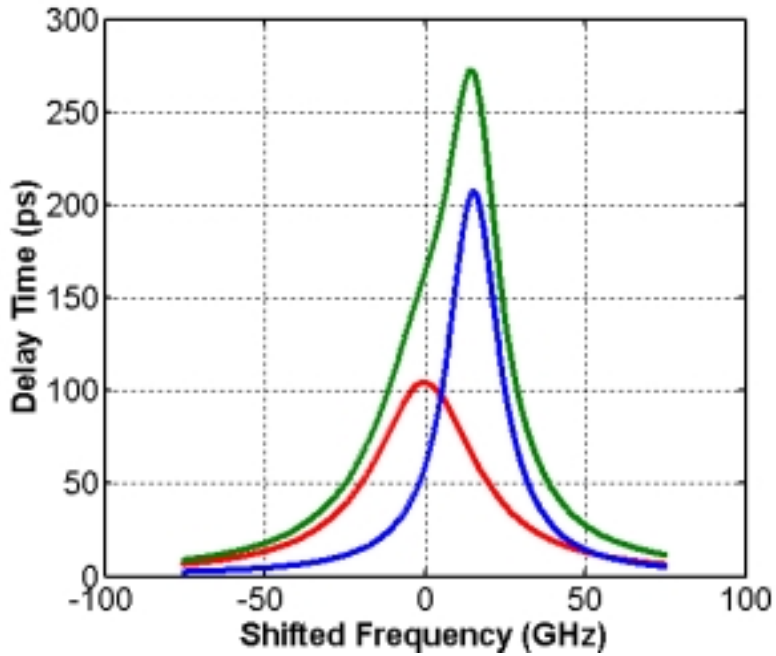
Tunable Delay Time



R_2 (Gap 0.05um)

R_1 (Gap 0.1um)

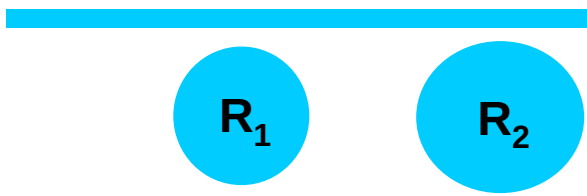
Total Delay Time



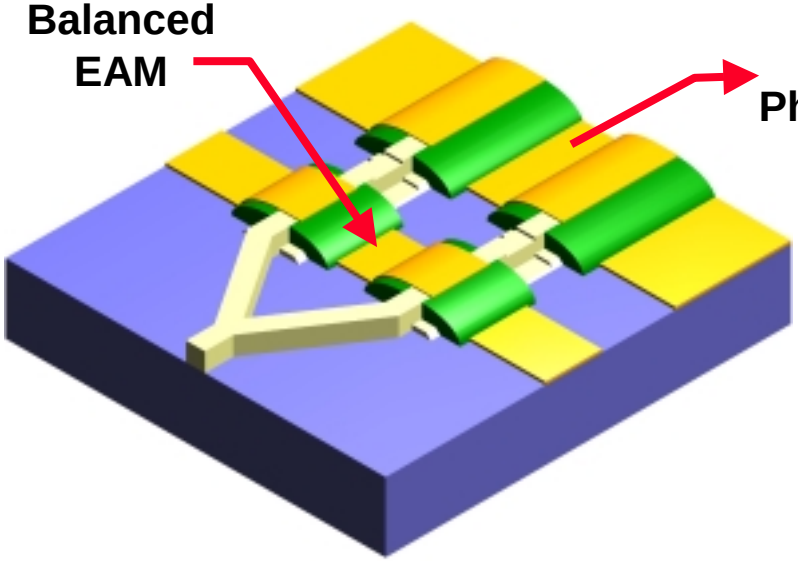
R_2 (Gap 0.1um)

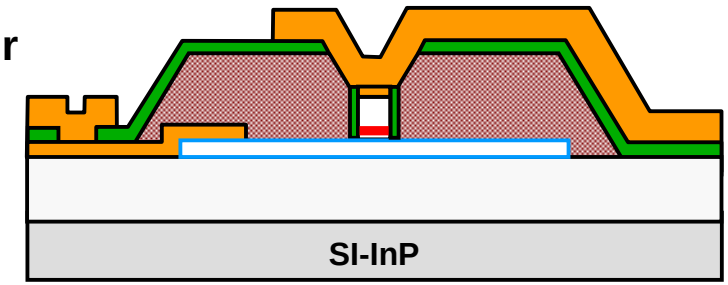
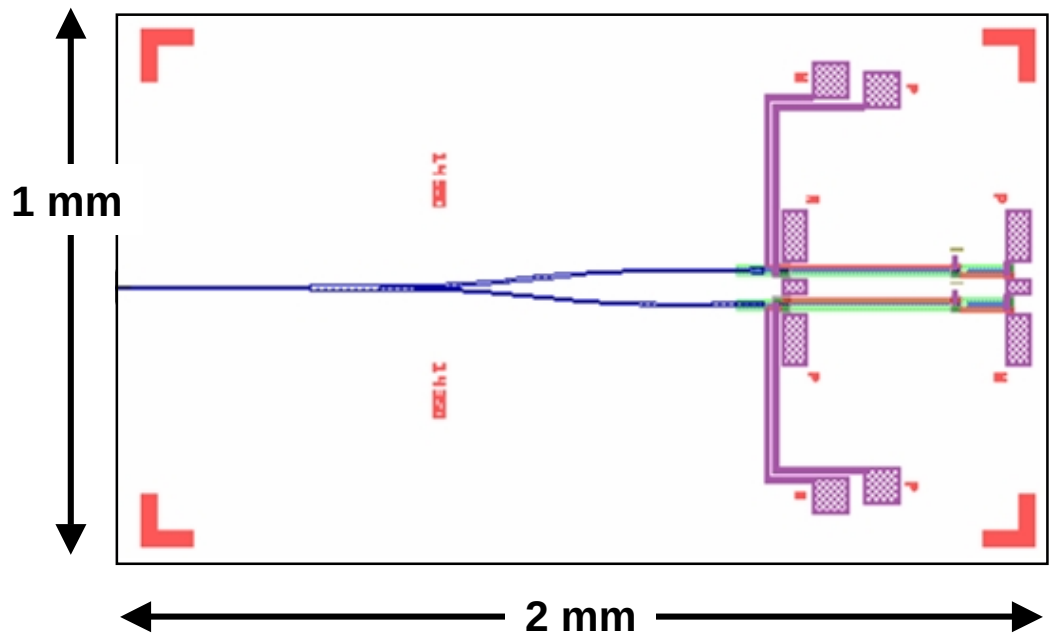
R_1 (Gap 0.05um)

Total Delay Time



Optoelectronic Processing of Labels using RF Lightwave Integrated Circuits





Balanced Electroabsorption Mixer Receiver (B-EMR)
-- A downconverting receiver
With common mode noise rejection