

ZF2/5 Složitější prvky vláknové a nelineární optiky - děliče, izolátory, atenuátory, modulátory.

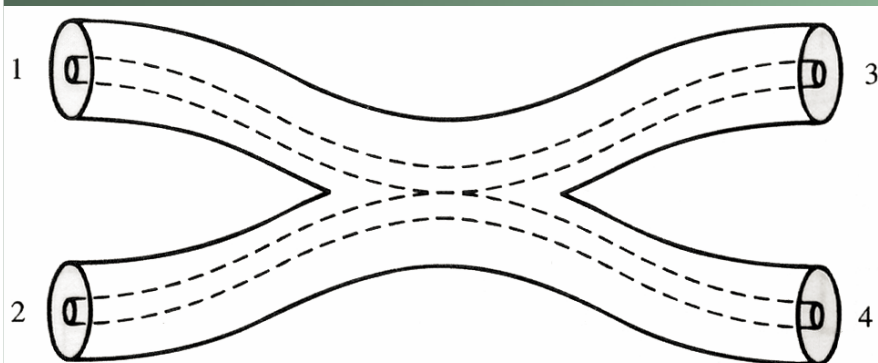


Jan Soubusta

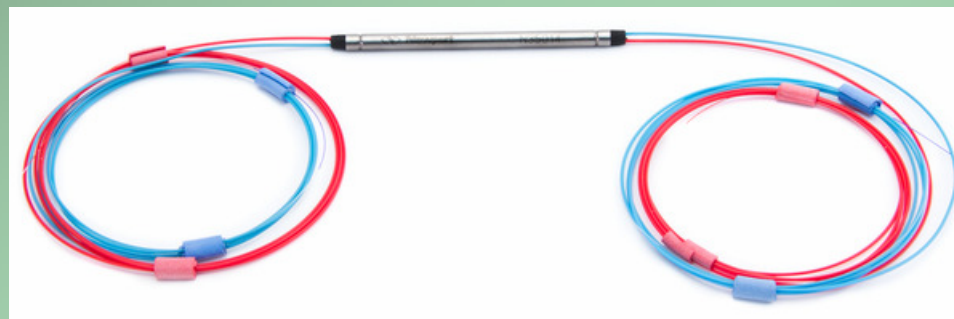
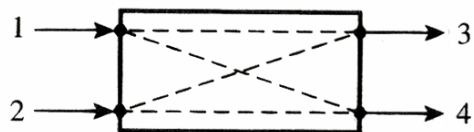
Společná laboratoř optiky UP a FZÚ AVČR
17. listopadu 50A, Olomouc



Vláknové děliče



(a)



Sifam

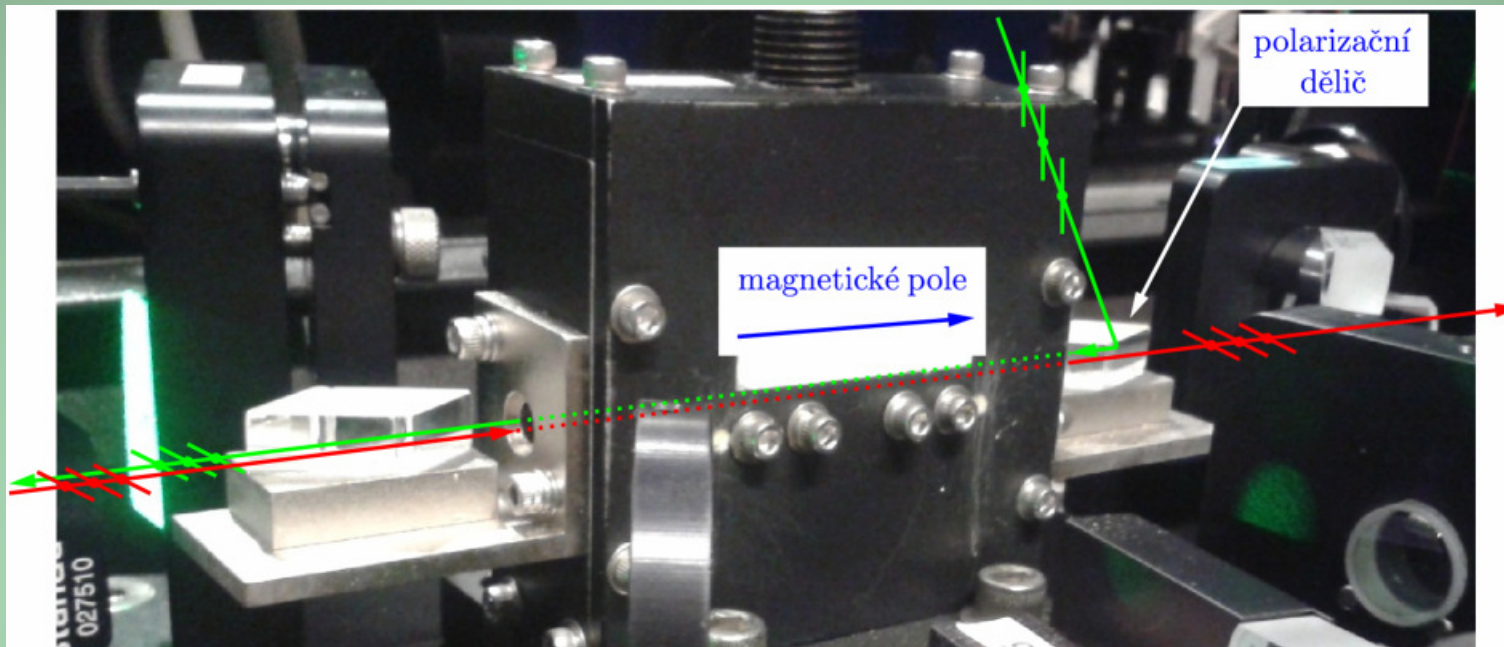
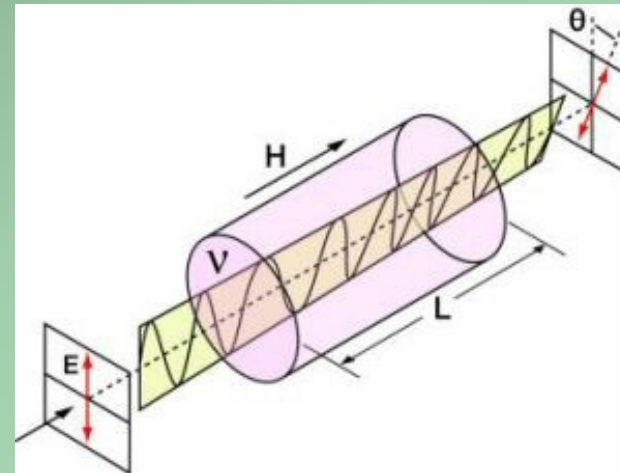


Vláknové děliče s proměnným dělicím poměrem

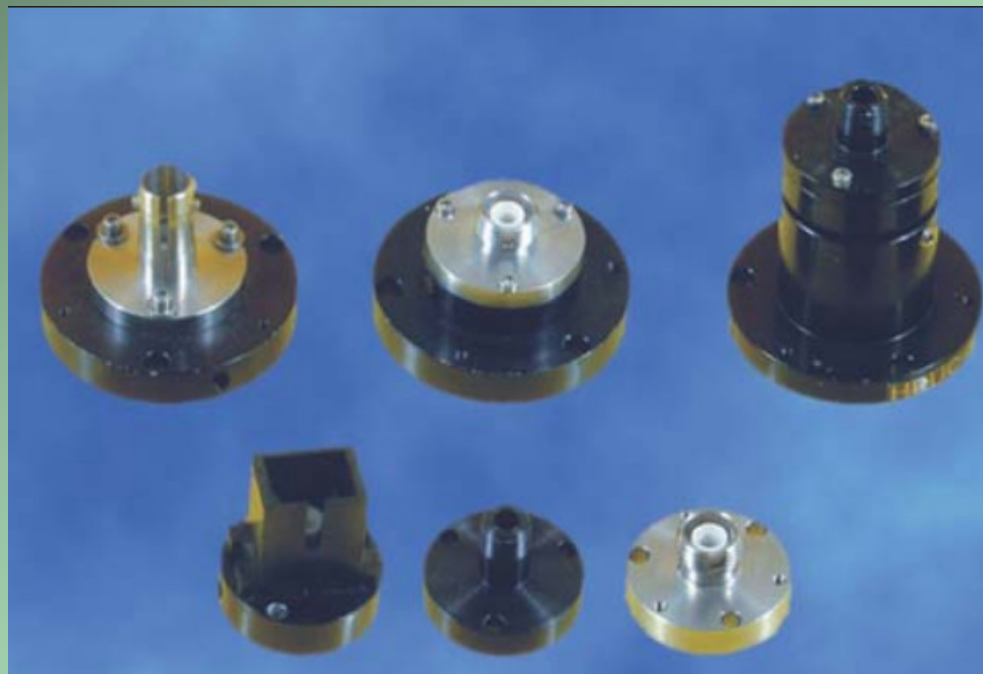


Vláknové izolátory

Thorlabs



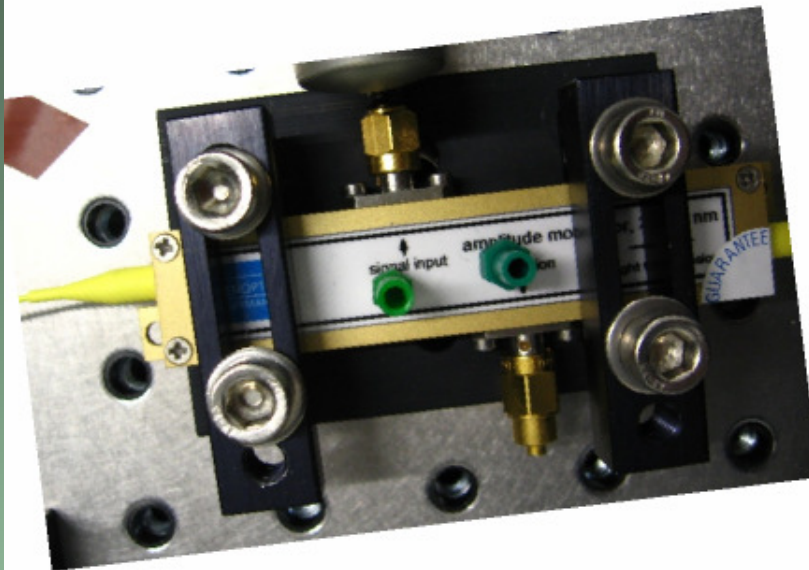
Vláknové kolimátory a atenuátory



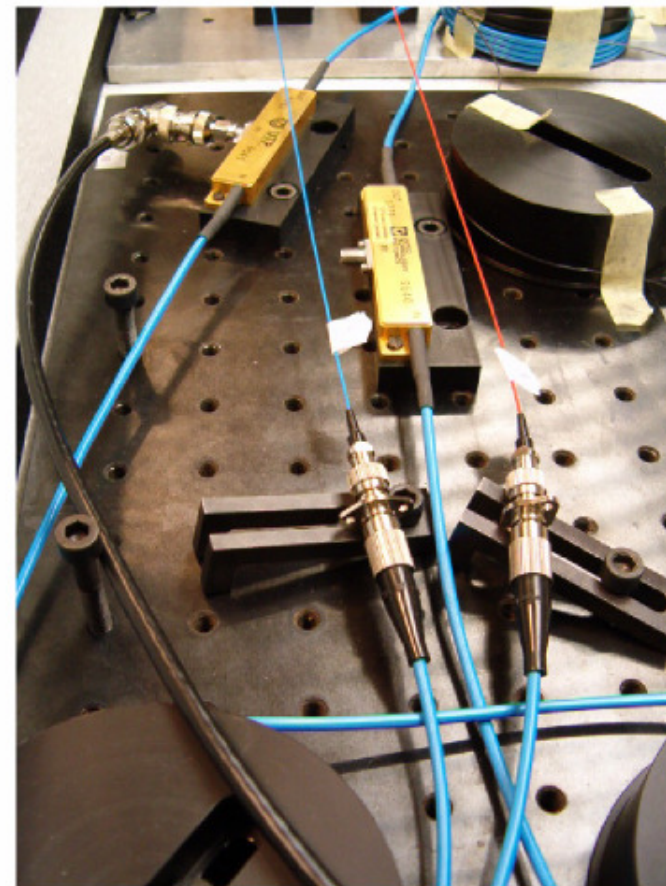
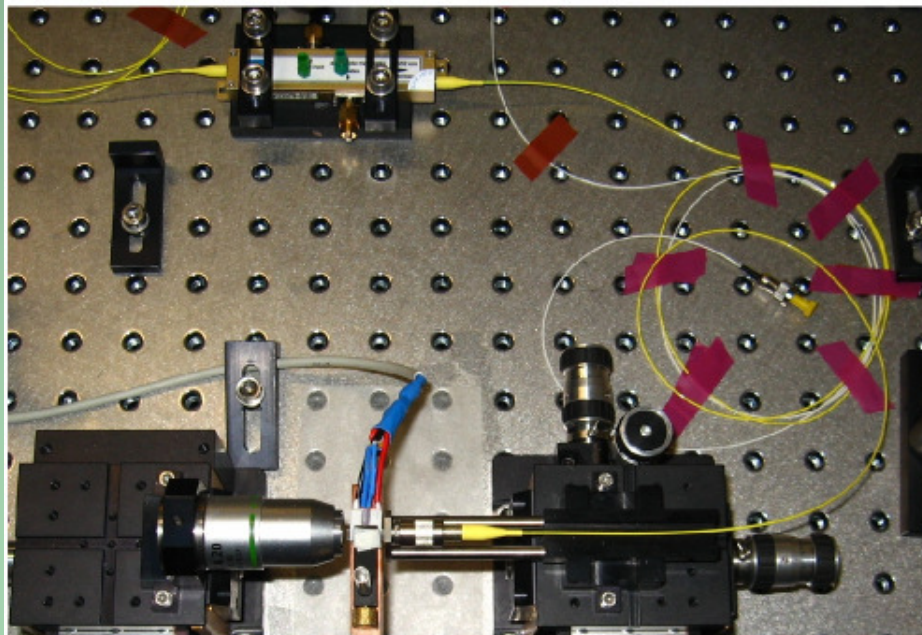
Receptacle Style Variable Attenuator

Vláknové modulátory

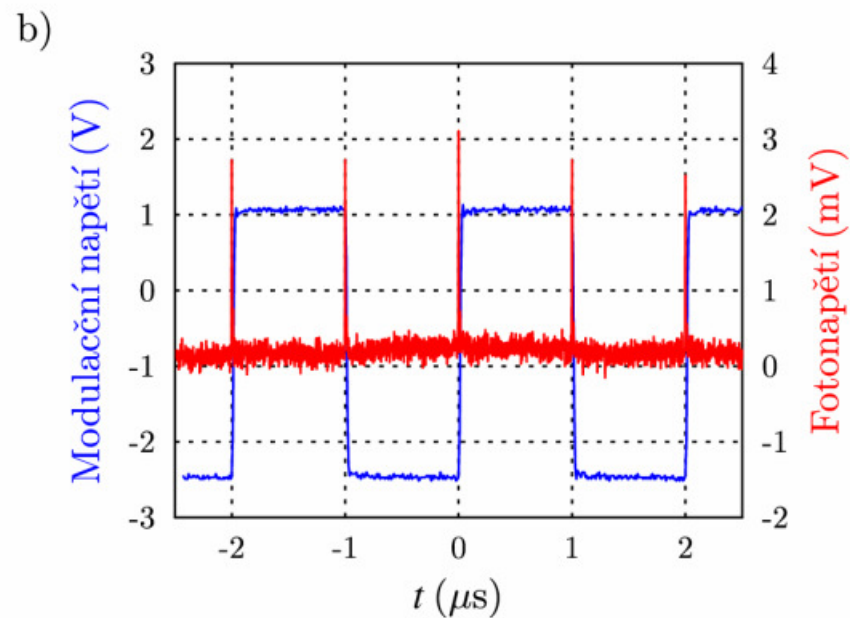
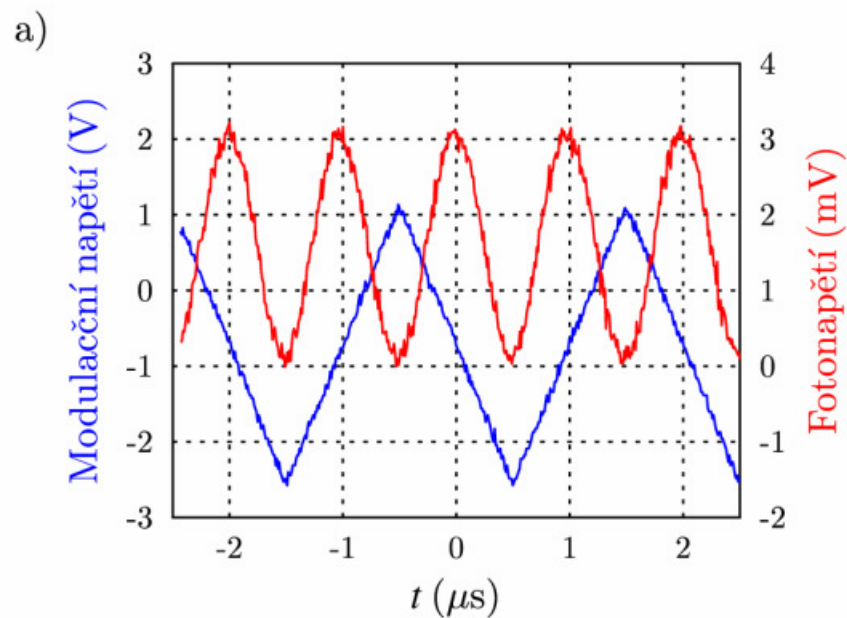
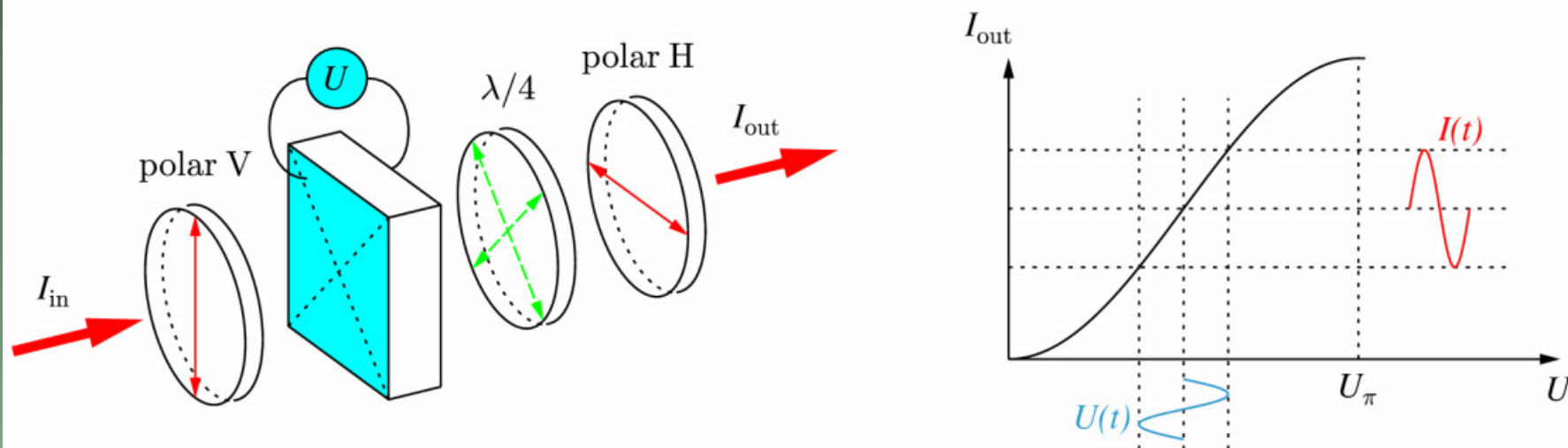
Amplitudové modulátory



Fázové modulátory

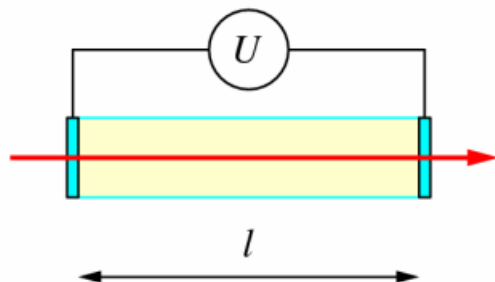


Amplitudový modulátor

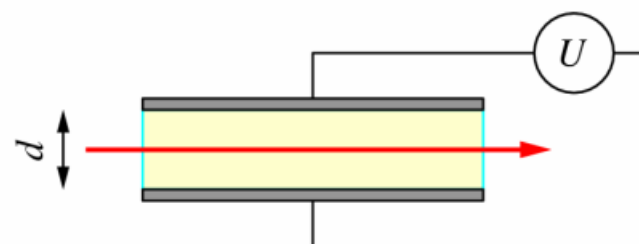


Fázový modulátor

a) podélné napětí



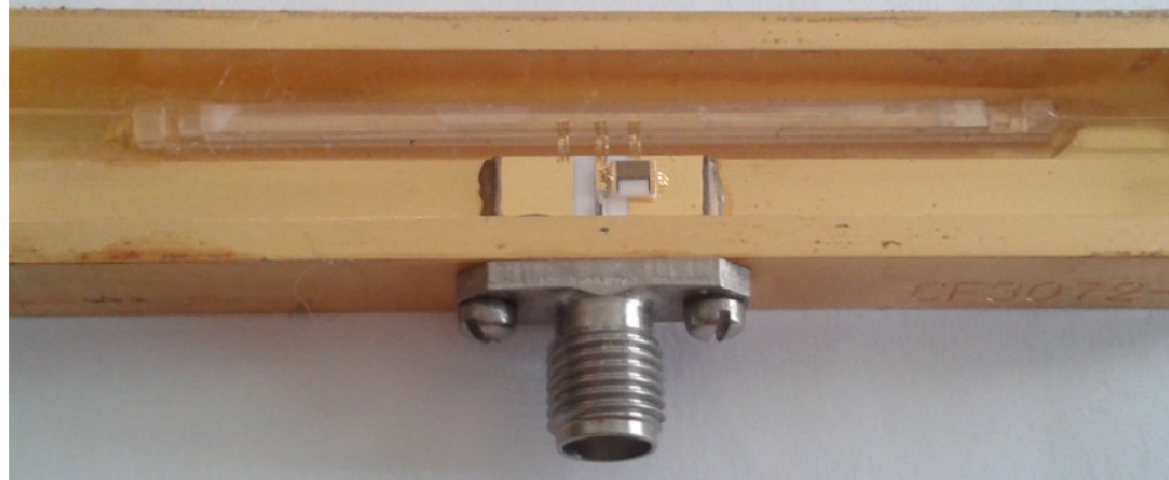
b) příčné napětí



a)

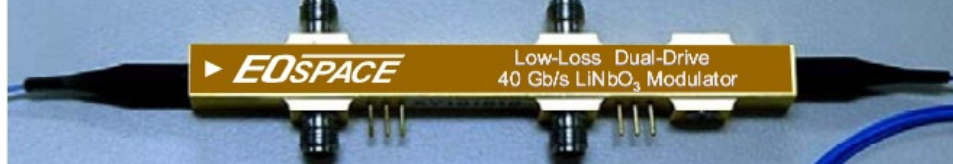
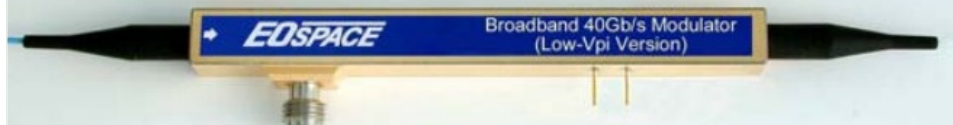


b)





(λ = 2000, 1700, 1550, 1310, 1060, 980, 830, 750, 650nm)



Shorter - λ 10-40+ GHz Modulators

- **Phase & Intensity & High Extinction Ratio** (>30 ,40 & >50dB)
- Low Insertion Loss < 4 dB, (< 3 dB option, 2 dB custom)
- Low- $V\pi$: <4V, <3V and <2V (ultra-low- $V\pi$ version)

10/20/40+ GHz Phase Modulators

- **Ultra-Low-Loss** versions: < 2 & <3 dB, <5V@1GHz, >10/20GHz
- **Ultra-Low- $V\pi$** version: < 3V@1GHz, >20 GHz, < 4 & <3dB
- **Extra-Bandwidth** version: < 4V@1GHz, >30 GHz, < 4 & <3dB
- Custom: $V\pi$ <2.5 V ; Integrated Polarizer

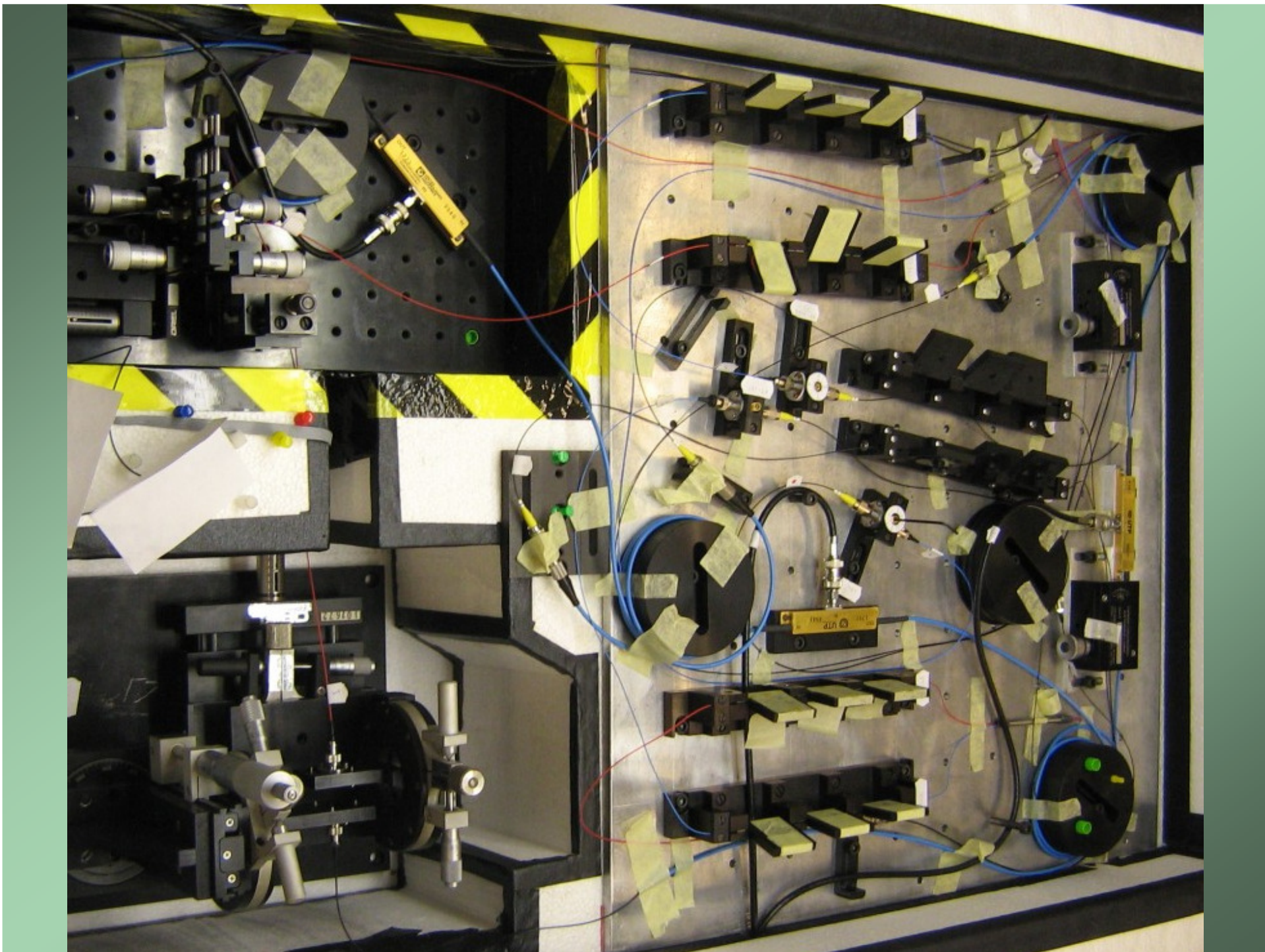
40+ Gb/s (Z-cut & X-cut) Modulators

- **Z-cut: Pre-chirp, Very-Low- $V\pi$** (new! ~3V available)
 - $V\pi$ < 3.5V@1GHz, BW >30-40GHz, <4 dB, (<3 dB option)
- **X-cut: Zero-chirp, Very-Low- $V\pi$** (new! ~4V available)
 - $V\pi$ < 5.0V@1GHz, BW >30-40GHz, <5 dB, (<4 dB option)
- **Ultra-Low- $V\pi$ Dual-Drive** (with GPPO & RF1.85mm) versions

10/20+ Gb/s (Z-cut & X-cut) Modulators

- **Z-cut: Pre-chirp:** Low-Loss < 3 dB, (< 2 dB option)
 - BW >12.5 GHz, (>18 GHz version); $V\pi$ < 4 V@1GHz
 - Lower- $V\pi$ Version: $V\pi$ < 3.5 V; and <3V @1GHz (custom)
- **X-cut: Zero-chirp:** Low-Loss < 4 dB, (< 3 dB option)
 - BW >12.5 GHz, (>18 GHz version); $V\pi$ < 5 V@1GHz
 - Lower- $V\pi$ Version: $V\pi$ < 4 V; and <3V @1GHz (custom)

Other available : • 1x2 (& 2x2) Dual-Output Modulators • Dual- λ : 1300/1550nm • Integrated Polarizer • Integrated PD device versions : • High Extinction (>30 & >40 & >60 dB) • Extended Temperature Range (-40°& -55°C → +100°C) Modulator



Polarizační kontrolery



General Polarization Control, Tracking, Scrambling



Polarization MUX, PMD/PDL Compensation Systems

High-speed **Polarization** Controllers

- Low Insertion Loss < 3 dB , (< 2 dB option)
- Response Time < 100 ns
- Multiple Integrated Device Stages: 1,3,4,5,6,7,8 etc.
- Available for $\lambda = 2000^+$, 1550, 1310, 1060, 850 nm, etc.

