Electro-Optics:

Electro-Optic Devices

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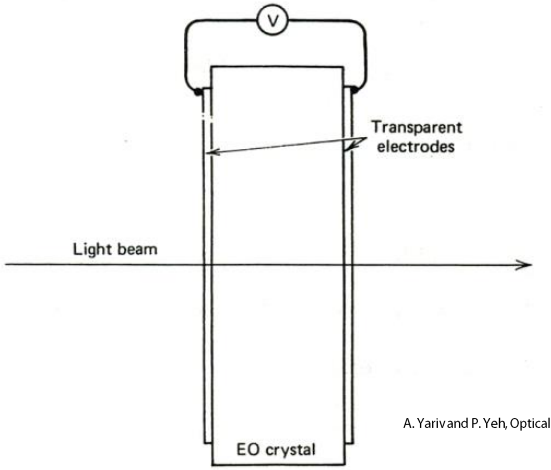
Electro-Optic Light Modulators

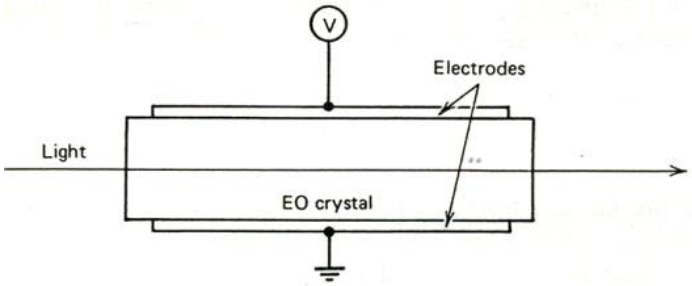
Longitudinal electro-optic modula

→ Large acceptance area with a thin EO crystal plate



A. Yariv and P. Yeh, Optical Waves in Crystals, John Wiley & Sons, 1984.

Transverse electro-optic modulation:

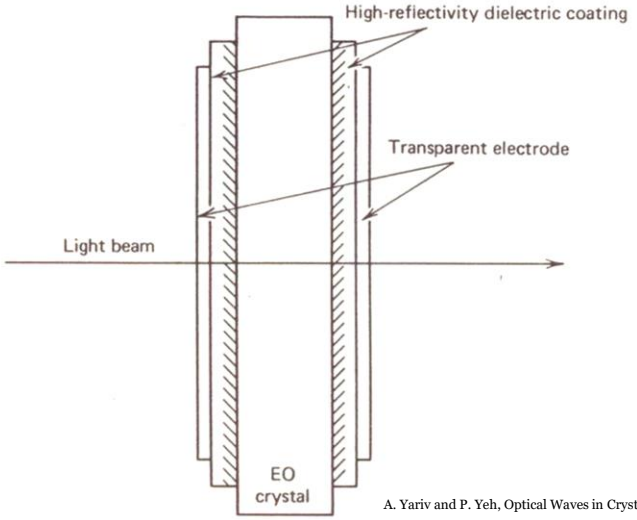


A. Yariv and P. Yeh, Optical Waves in Crystals, John Wiley & Sons, 1984.

→ Long interaction length at a given field strength

Electro-Optic Fabry-Perot Modulators

Electro-optic amplitude modulator:



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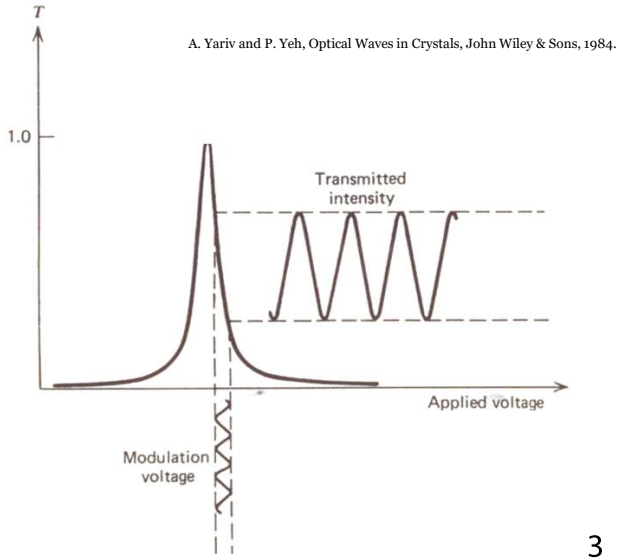
Transmission as a function of applied voltage:



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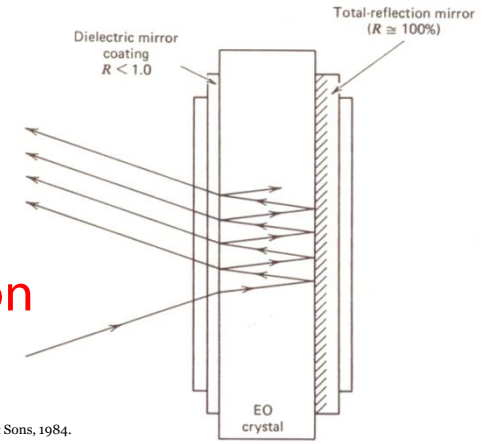
Phase modulation:

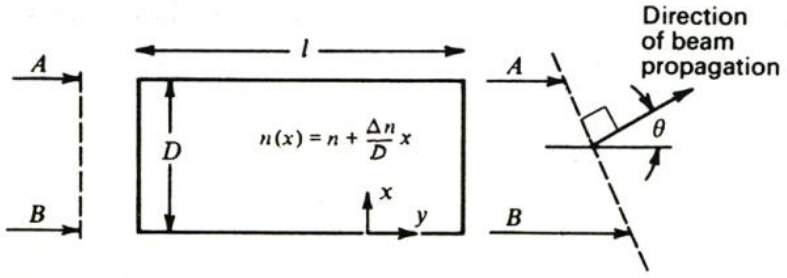


A. Yariv and P. Yeh, Optical Waves in Crystals, John Wiley & Sons, 1984.

→ Gires-Tournois eltalon

Electro-Optic Beam Deflectors

Double-prism KDP beam deflectors:



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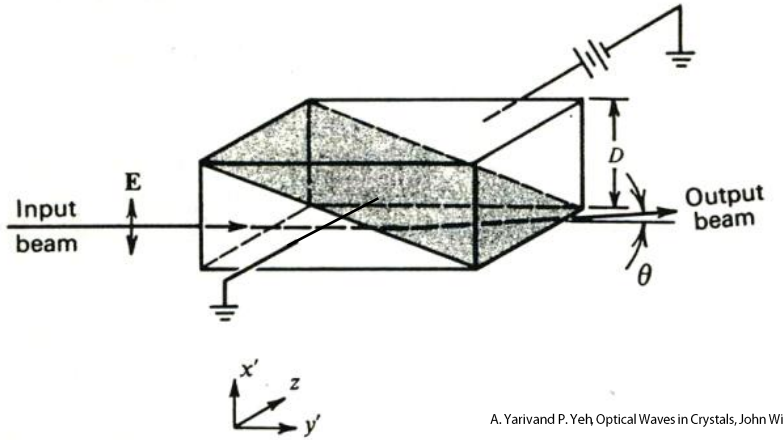

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Electro-Optic Property of Liquid Crystal

Liquid crystals:

Liquid crystal phases: smectic, nematic, and cholesteric
Nematic LC: uniaxial dipole moment
$\rightarrow$ Dynamic director alignment along the applied electric field
$\rightarrow$ Switching time: ~msec

Twisted nematic LC in liquid crystal displays (LCDs)