Moving Target Indicators

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LEDs vs Laser Diodes for short-range communication

Why use LEDs when Laser Diodes are faster? For broadband short-range optical fiber communications, like LANs and Fiber-in-the-Home networks, LEDs are:

- cheaper
- safer for the human eyes
- less sensitive to temperature variations
- and more durable

Disadvantage of using LEDs

- The problem with LED is *low modulation rate!*
- While laser diodes have reached to tens of Gbps, commercial DH-LED (double heterostructure) is still limited at 100 Mbps.

Efforts that were not successful

Efforts have been made to get upto 500 Mbps for conventional LEDs using

- multilevel Pulse Amplitude Modulation (M-PAM)
- and discrete multitone modulation (DMT)

But these techniques are *highly complex* compared to the simple on-off keying (OOK) direct modulation scheme.

References

- Merrill I. Skolnik, *"Introduction to Radar Systems"*, McGraw-Hill, 2001.