

Proposal for Dispersion Penalty estimation

- ✓ In 10G-EPON, we will use SLM-LD and will not use MLM-LD. In this case, dispersion penalty will be dominated by LD “chirp”, not by mode-partition-noise.
- ✓ So we would like to propose to use Agrawal’s equation as one of candidate to estimate the chromatic dispersion penalty caused by LD “chirp”.

$$\delta_d = 5 \text{Log}_{10} \left[\left(1 + 8C\beta_2 B^2 L \right)^2 + \left(8\beta_2 B^2 L \right)^2 \right] \quad \beta_2 = -\frac{\lambda^2}{2\pi c} D$$

C: Chirp Parameter

L: Transmission distance

B: Bit rate

Source: Govind P. Agrawal, Fiber-Optic communication Systems, Third edition