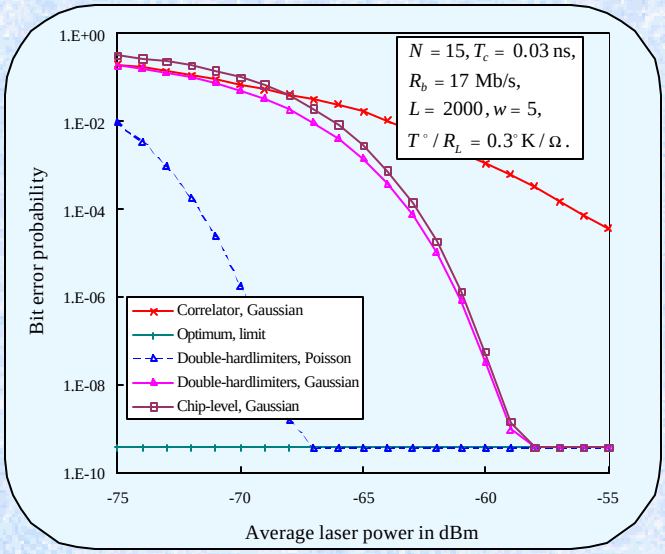
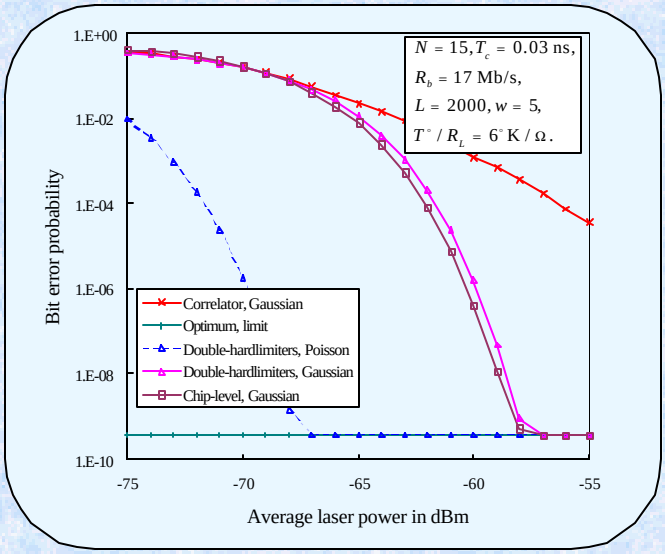
Nanyang Technological University

Network Technology Research Centre

Complexity and Performance Comparisons Between Optical OOK-CDMA Chip-Level Receivers and Double-Optical-Hardlimiters Correlation Receivers

Avalance photodetectors and thermal noise case.





- Optimum thresholds for both receivers.
- Ideal sharp characteristics for the hardlimiters.
- System parameters:

  1) $\lambda = 1.3\mu$m 2) $T_c = 0.03$ns
  3) $\eta = 0.8$ 4) $I_d = 1$nA
  5) $G = 100$ 6) $k_{\text{eff}} = 0.02$

- The bit error rate of the correlation receiver with double hardlimiters is slightly better than that of the chip-level receiver for low thermal noise.
- The bit error rate of the chip-level receiver is slightly better than that of the correlation receiver with double hardlimiters for high thermal noise.
- They coincide with each other by increasing the average optical power and reach an error probability floor.