

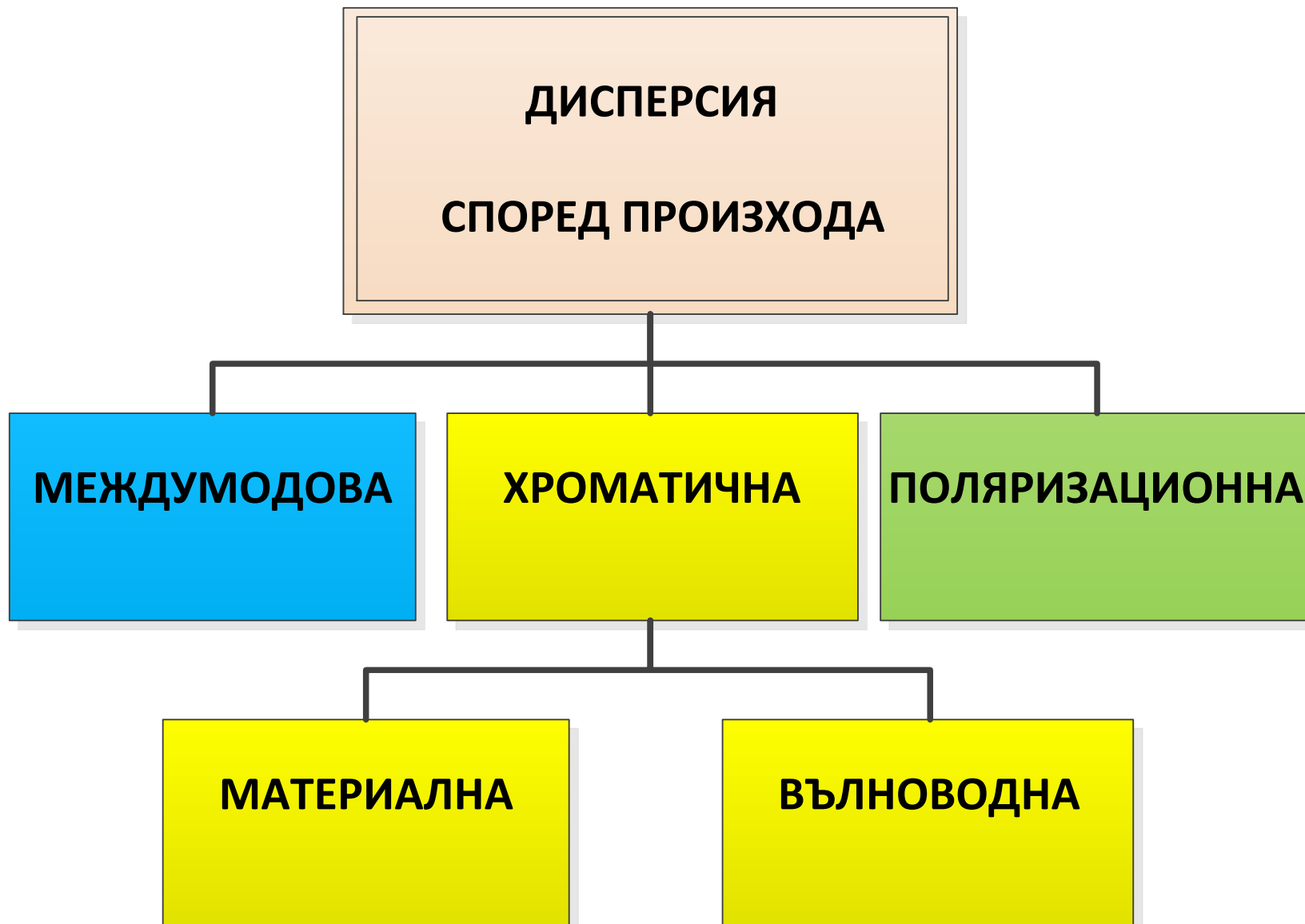
ВЛАКНЕСТО-ОПТИЧНИ КОМУНИКАЦИОННИ СИСТЕМИ.

УПЛЪТНЕНИЕ ПО ДЪЛЖИНА НА ВЪЛНАТА (WDM)

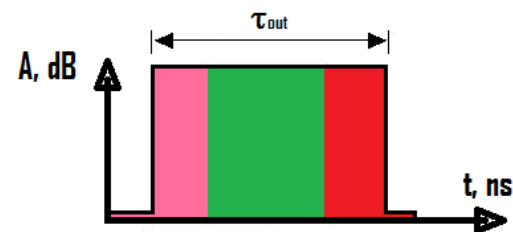
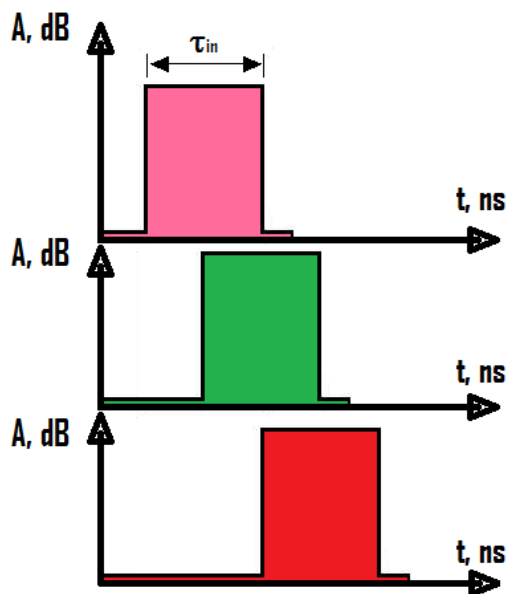
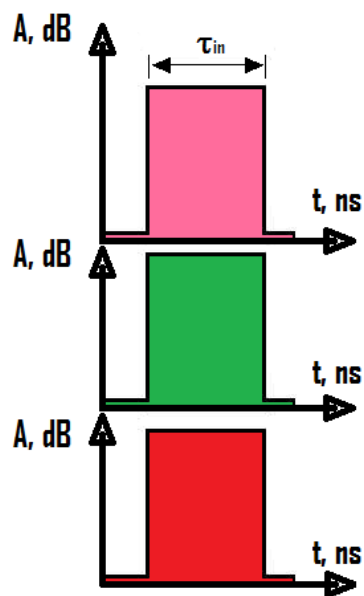
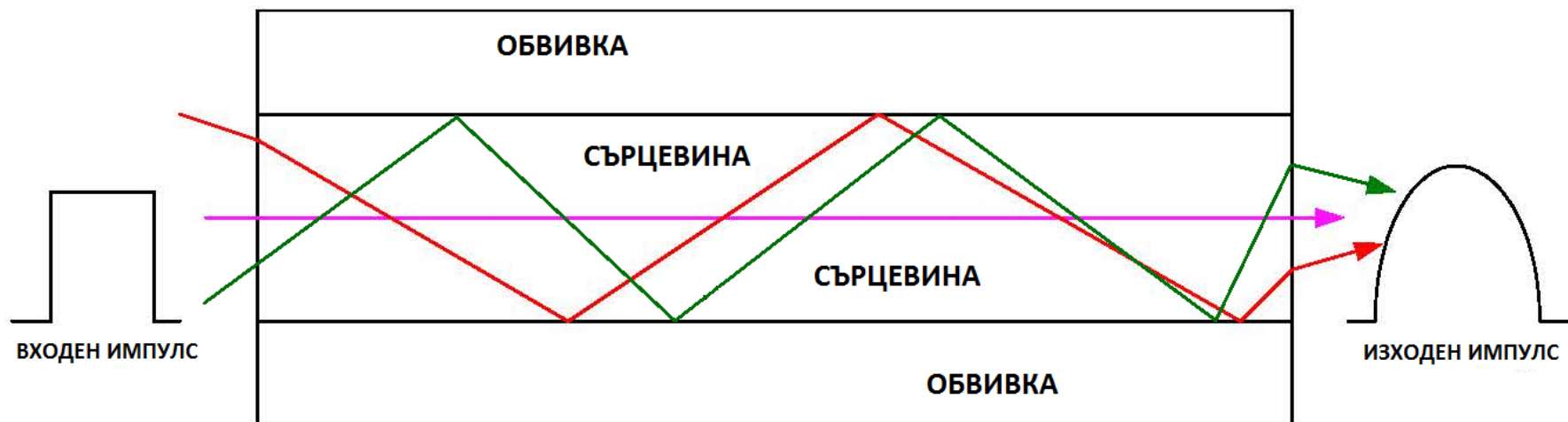
Цел на упражнението:

- ✓ Запознаване с основните принципи на проектиране на дълги влакнесто-оптични комуникационни трасета;
- ✓ Числено оценяване на дисперсионните и нелинейни ефекти;

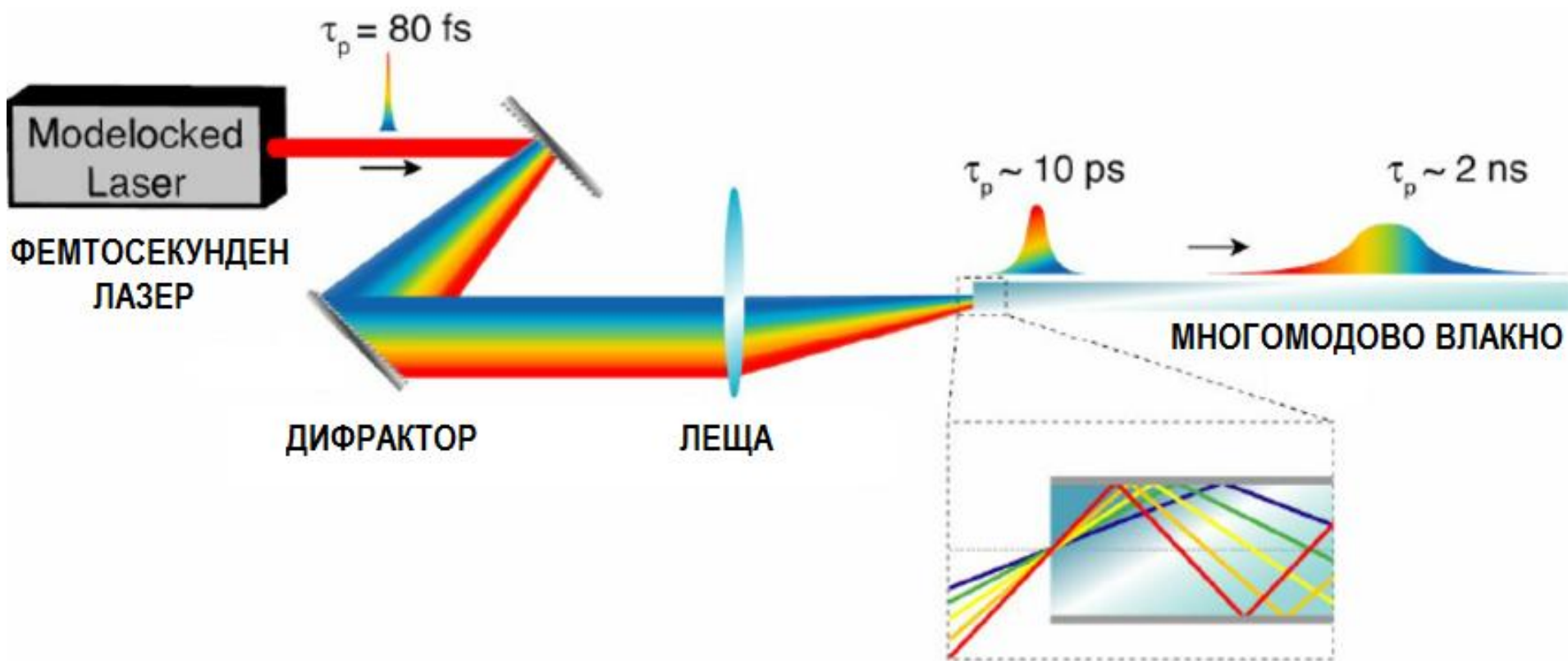
ДИСПЕРСИЯ ВЪВ ВОКС



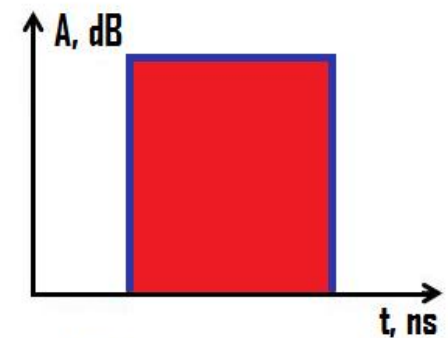
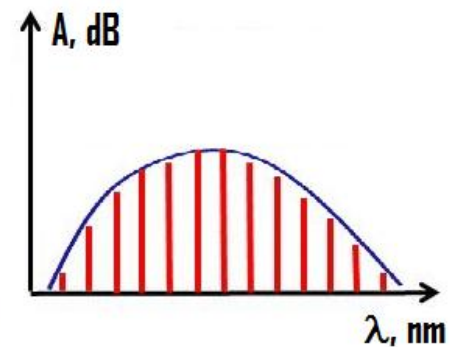
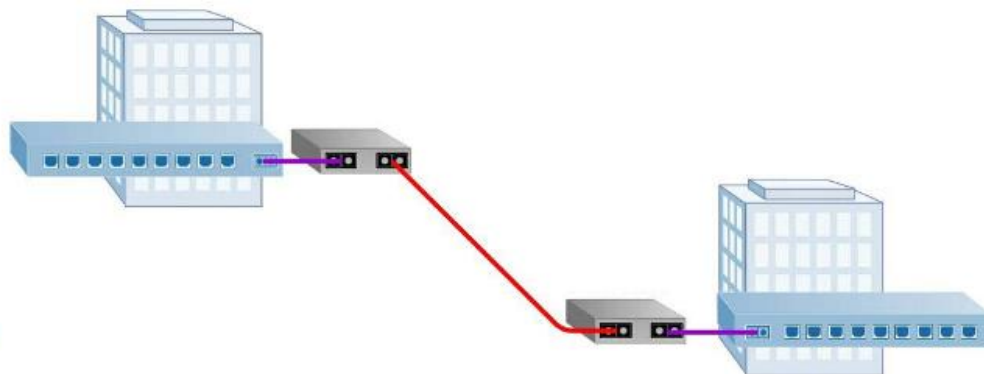
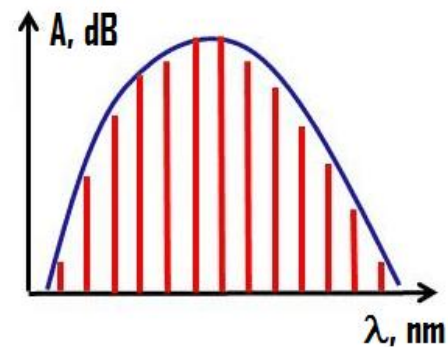
МЕЖДУМОДОВА ДИСПЕРСИЯ



ХРОМАТИЧНО-МОДОВА ДИСПЕРСИЯ

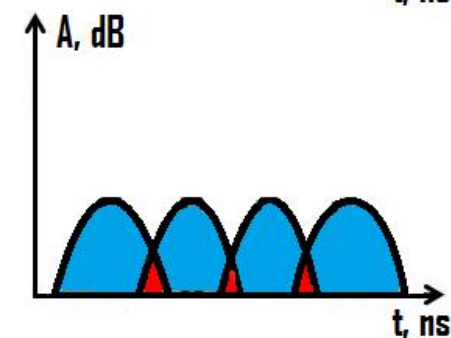
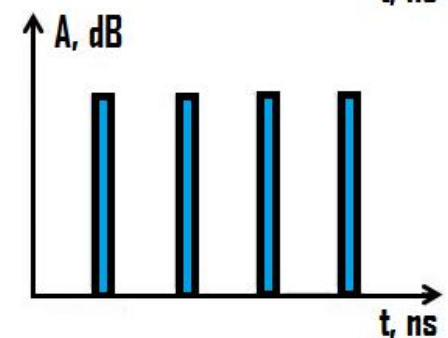
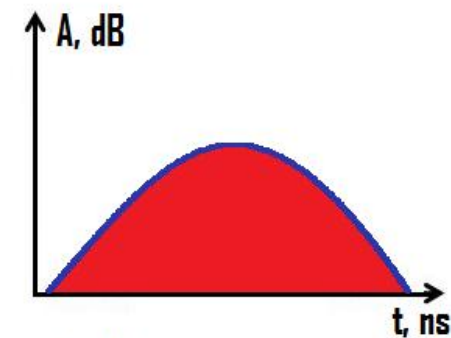


ХРОМАТИЧНА ДИСПЕРСИЯ

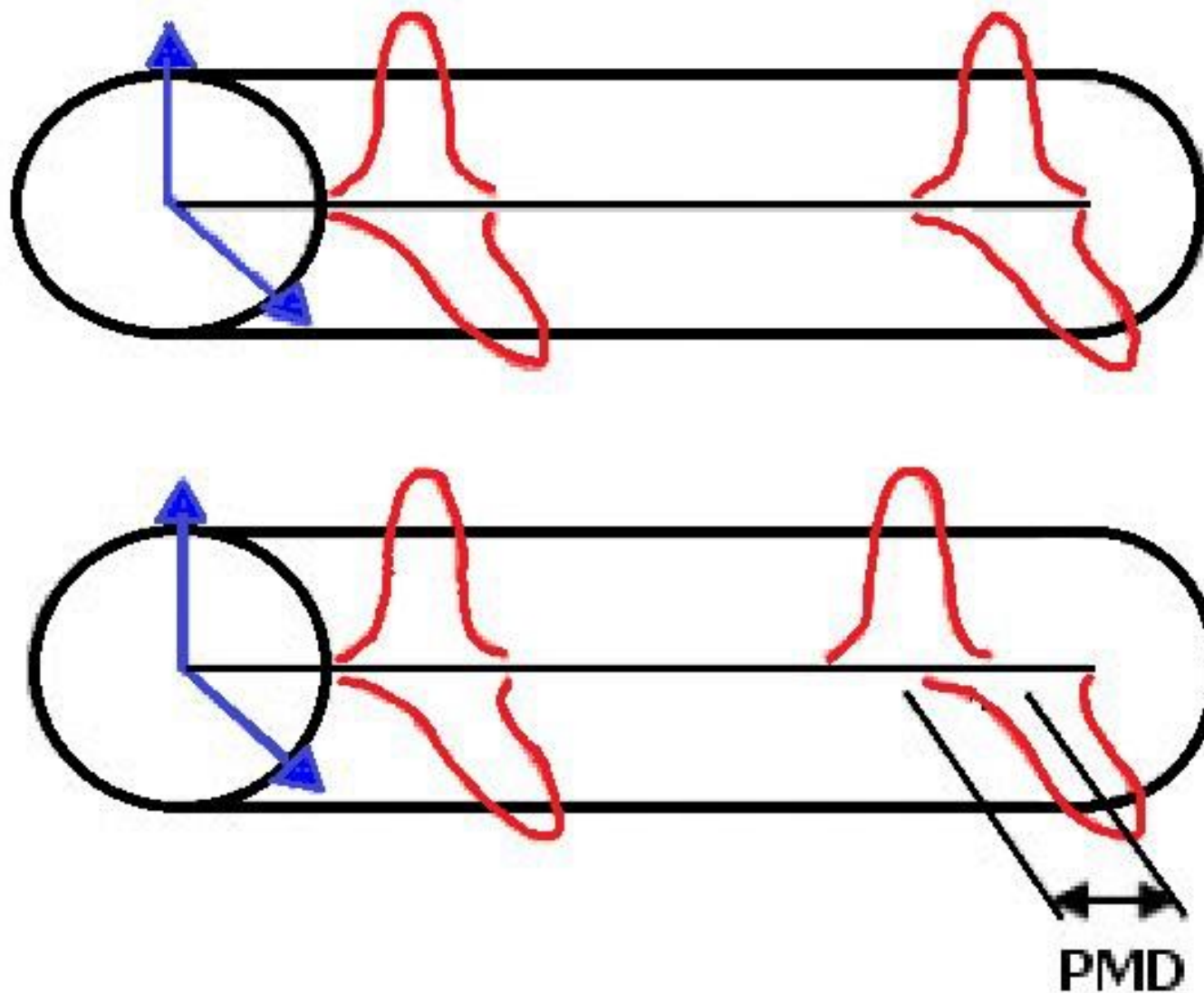


$$C_{chr}(\lambda) = \frac{S_0}{4} \left[\lambda - \frac{\lambda_0^4}{\lambda^3} \right], ps / nm$$

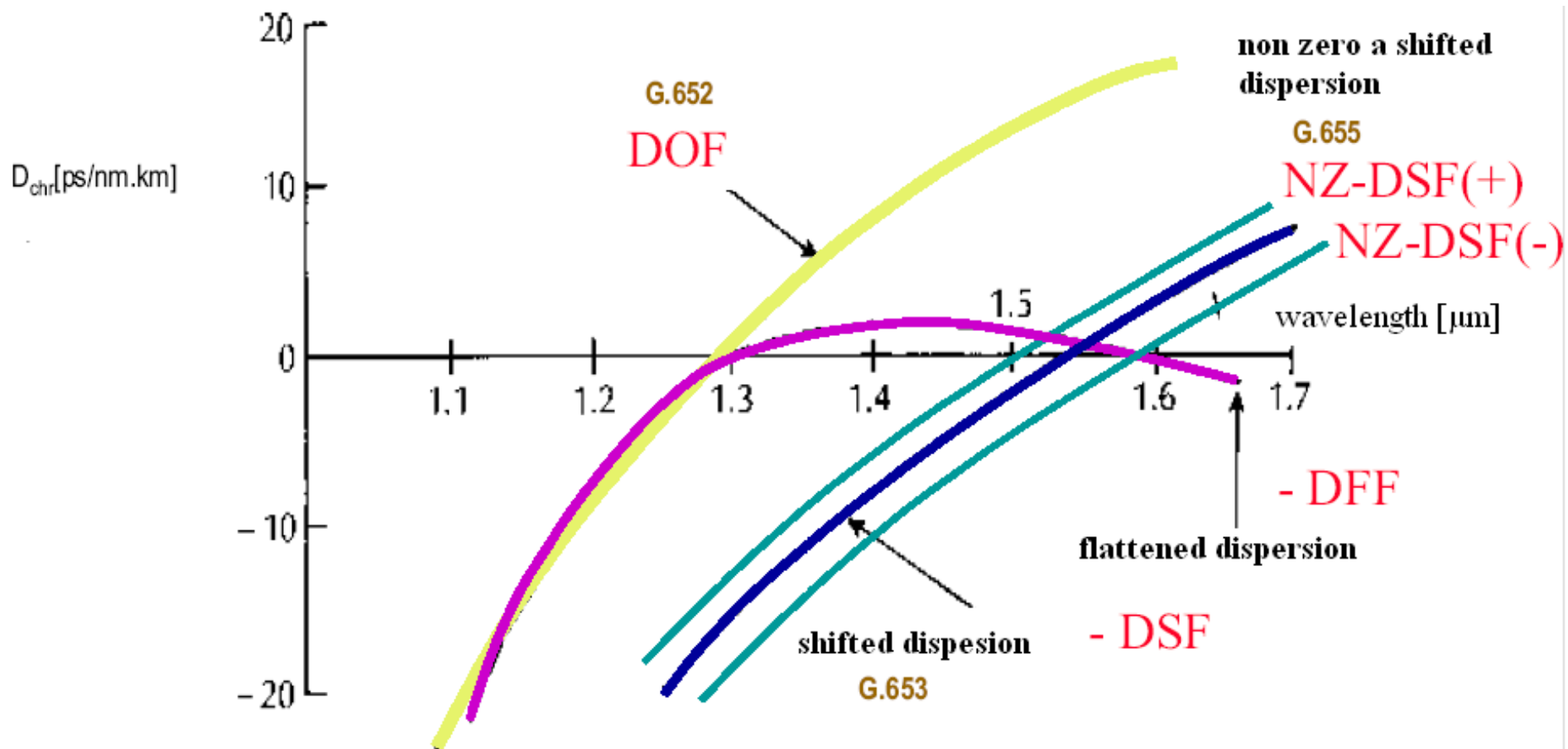
$$\lambda \in [1200; 1625] nm$$



ПОЛЯРИЗАЦИОННА ДИСПЕРСИЯ



ДИСПЕРСИОННО-ВЪЛНОВА ХАРАКТЕРИСТИКА НА ВАКНАТА



СТАНДАРТНИ ВЛАКНА

NZ–DSF (Non Zero Dispersion Shifted Fiber) (с положителна и отрицателна дисперсия) (ITU G.655).

SM влакната може да се класифицират по степента на нарастване на дисперсионната характеристика :

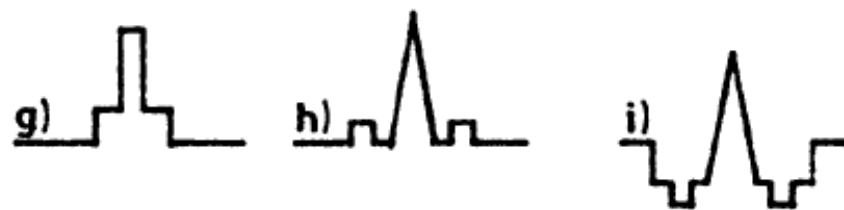
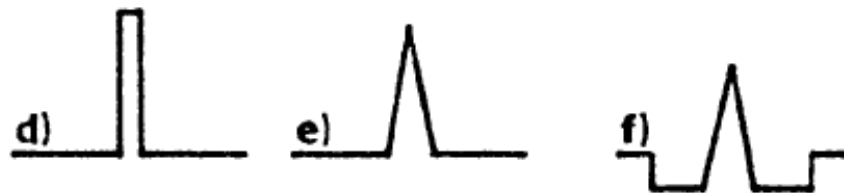
- Conventional fibers (CF) – нулева дисперсия при 1310 nm;
- Dispersion Shifted Fibers (DSF) – нулева дисперсия при 1550 nm;
- Dispersion Flattened Fibers (DFF) – изгладена ненулева дисперсионна характеристика от 1300 nm до 1600 nm.

ПРОФИЛИ НА КОЕФ. НА ПРЕЧУПВАНЕ НА SM ОПТИЧНИ ВАКНА

Optimized for 1300 nm



Dispersion shifted



Dispersion flattened

