

---

## Annex 1: Coupled-mode differential equations

$$\begin{cases} \frac{db_F(z, \beta)}{dz} + i\beta b_F(z, \beta) = q(z)b_B(z, \beta) \\ \frac{db_B(z, \beta)}{dz} - i\beta b_B(z, \beta) = \bar{q}(z)b_F(z, \beta) \end{cases} \quad z \in [0, L], \beta \in \mathbf{R} \quad (1)$$

with the limit conditions:

$$\begin{cases} b_F(0, \beta) = 1 \\ b_B(L, \beta) = 0 \end{cases}$$

where  $\beta$  is the detuning parameter:

$$\beta = \frac{2\pi n_0}{\lambda} - \frac{\pi}{\Lambda_0}$$

and  $q$  denotes the coupling coefficient:

$$q(z) = -\frac{i\pi}{2n_0\Lambda_0} \delta n(z) \exp(-i\Phi(z))$$