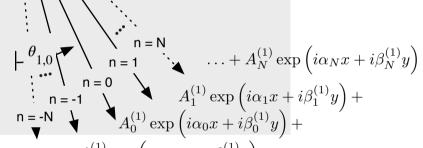


 $\begin{array}{c}
\text{Refractive index } v_1 \\
\text{(possibly complex, lossy)}
\end{array}$

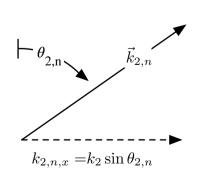
2

$$\alpha_0 = k_2 \sin \theta_2$$

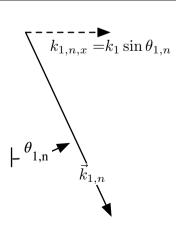
$$\alpha_n = \alpha_0 + \frac{2\pi n}{d}$$



$$A_{-1}^{(1)}\exp\left(i\alpha_{-1}x+i\beta_{-1}^{(1)}y\right)+$$
 Inside the grating: $U_z^{(1)}=A_{-N}^{(1)}\exp\left(i\alpha_{-N}x+i\beta_{-N}^{(1)}y\right)+\ldots+$



Reflected wavevectors $\vec{k}_{2,n}$



Transmitted wavevectors
$$ec{k}_{1,n}$$

$$\begin{aligned} k_{2,n,s} &= \alpha_n \\ k_2 \sin \theta_{2,n} &= \alpha_n \\ k_2 \sin \theta_{2,n} &= \alpha_0 + \frac{2\pi n}{d} \\ k_2 \sin \theta_{2,n} &= k_2 \sin \theta_2 + \frac{2\pi n}{d} \\ \sin \theta_{2,n} &= \sin \theta_2 = \frac{2\pi n}{d k_2} \\ \sin \theta_{2,n} &= \sin \theta_3 = \frac{n}{d} \frac{2\pi n}{d \nu_2} \\ \sin \theta_{2,n} &= \sin \theta_2 = \frac{n \lambda_2}{d \nu_2} \\ \sin \theta_{2,n} &= \sin \theta_2 = \frac{n \lambda_2}{d \nu_2} \\ \sin \theta_{2,n} &= \sin \theta_2 = \frac{n \lambda_2}{d \nu_2} \end{aligned}$$