

Interferentieverschijnselen

2-DIM golven, 2 synchroon-trillende bronnen

$$u_1 = A_1 \sin(\omega t - kr_1)$$

$$u_2 = A_2 \sin(\omega t - kr_2)$$

$$\Rightarrow u_p = A \sin(\omega t + \psi)$$

$$\Delta\varphi = k(r_2 - r_1)$$

- *Buik:*

$$\Delta\varphi = n2\pi$$

$$r_2 - r_1 = n\lambda$$

- *Knoop*

$$\Delta\varphi = (2n+1)\pi$$

$$r_2 - r_1 = (2n+1)\frac{\lambda}{2}$$

Terugkaatsing 1-DIM golf

Overgang tussen 2 middenstoffen

$$A_r = \frac{k_1 - k_2}{k_1 + k_2} A_i$$

$$A_t = \frac{2k_1}{k_1 + k_2} A_i$$

$$\rightarrow k \approx v_f \approx \sqrt{\mu}$$

- $R = \frac{A_r}{A_i}$

- $T = \frac{A_t}{A_i}$

Staande 1-DIM golf, vast uiteinde

- $R = -1$

- *Knopen:*

$$A = 0 \Leftrightarrow |x| = n\frac{\lambda}{2}$$

- *Buiken*

$$A_{extr} = 2A_i \Leftrightarrow |x| = (2n+1)\frac{\lambda}{4}$$

Staande 1-DIM golf, vrij uiteinde

- $R = +1$

- *Knopen:*

$$A = 0 \Leftrightarrow |x| = (2n+1)\frac{\lambda}{4}$$

- *Buiken*

$$A_{extr} = 2A_i \Leftrightarrow |x| = n\frac{\lambda}{2}$$

transversale staande golven in gespannen draad

- $L = n\frac{\lambda}{2}$

- $f_n = \frac{n}{2L} \sqrt{\frac{F_{sp}}{\mu}}$