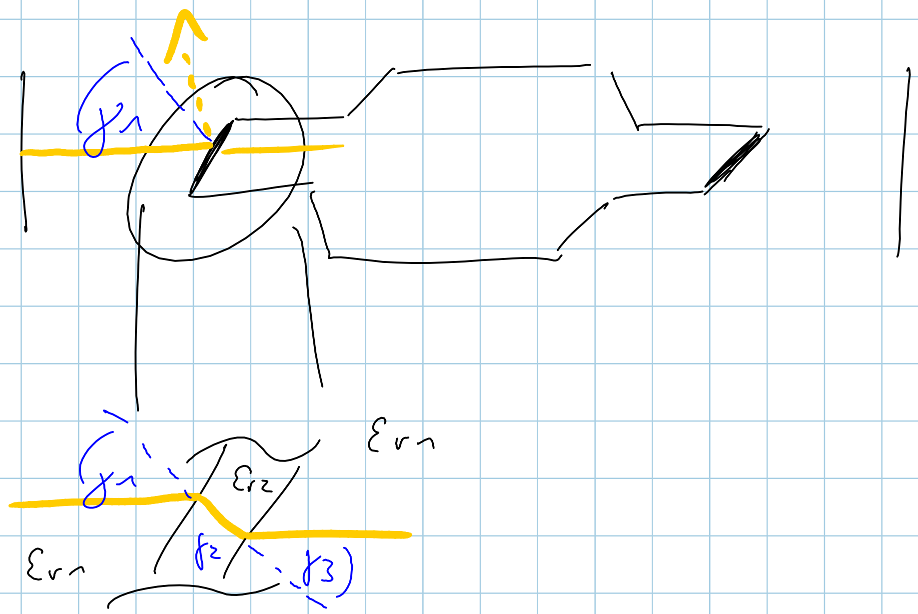
GGÜ 8

Dienstag, 24. Mai 2011
13:52



1.3.1 Polarisation:

Parallel zur Reflexionsebene (nur hierbei existiert Brewsterwinkel)

$\gamma_1 = 56°$ (Brewsterwinkel)

Snellius: $\underbrace{\cancel{\sqrt{\varepsilon_{r1}}}}^{1} \sin\gamma_1 = \underbrace{\cancel{\sqrt{\varepsilon_{r2}}}}^{1,5} \sin\gamma_2 = \underbrace{\cancel{\sqrt{\varepsilon_{r1}}}}^{1} \sin\gamma_3$

$\Rightarrow \gamma_1 = \gamma_3$

$\gamma_2 = 33,7° \longrightarrow$ Brewsterwinkel für Einfall der Welle auf die Grenzschicht aus dem dichteren Material ($\varepsilon_r = 2,25$)

Einschub:

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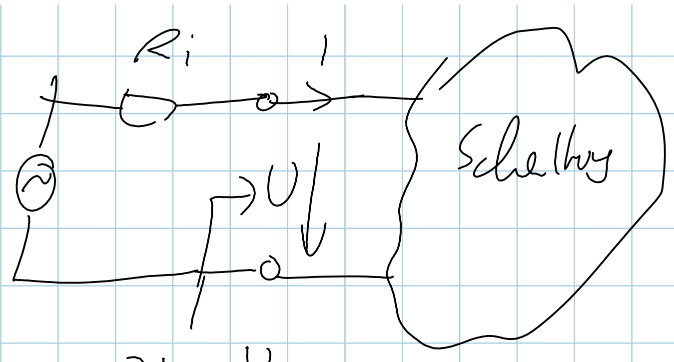
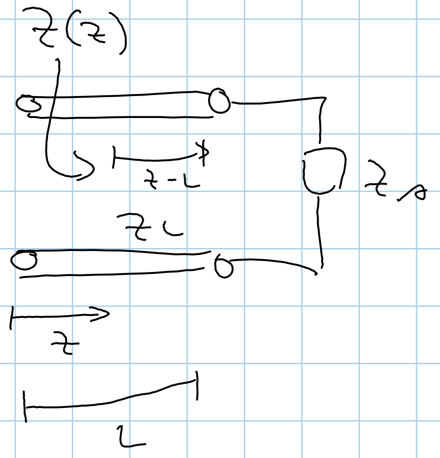


$$Z_{in} = \frac{U}{I}$$

$$r_{in} = \frac{Z_{in} - R_N}{Z_{in} + R_N}$$



$$r(z) = \frac{Z(z) - Z_L}{Z(z) + Z_L}$$

$$P = P_{verf}\left(1 - |r_{in}|^2\right), \text{ wenn } R_N = R_i$$

Aufgabe 3

3.1.1) $P_1(f_1) = \dfrac{|U_{g1}|^2}{8R_i}$

$$P_2(f_1) = P_1(f_1)$$

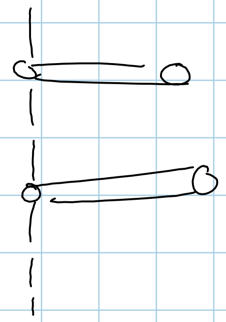
$$P_2(f_2) = P_1(f_2) = 0$$

3.1.2) $r_1(f_1) = 0$ $\qquad Z_1(f_1) = R_i$

$|r_1(l_2)| = 1$ $\quad Z_1(l_2) = jX$ mit $-\infty \leq X < \infty$

3.2.1)

$Z_{in} \to \infty$ $\longrightarrow$



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$\to l = \frac{\lambda_2}{2} \quad \Rightarrow \quad \frac{l}{\lambda_2} = \frac{1}{2}$

3.2.2) $\quad \frac{l_1}{\lambda_1} = \frac{l_1}{\lambda_2} \cdot \frac{\lambda_2}{\lambda_1} = \frac{1}{2} \frac{f_1}{f_2} = \frac{1}{4}$

$Z_A(f_1) = 0 \qquad r_A(f_1) = -1$

$Z_A(f_2) \to \infty \qquad r_A(f_2) = +1$