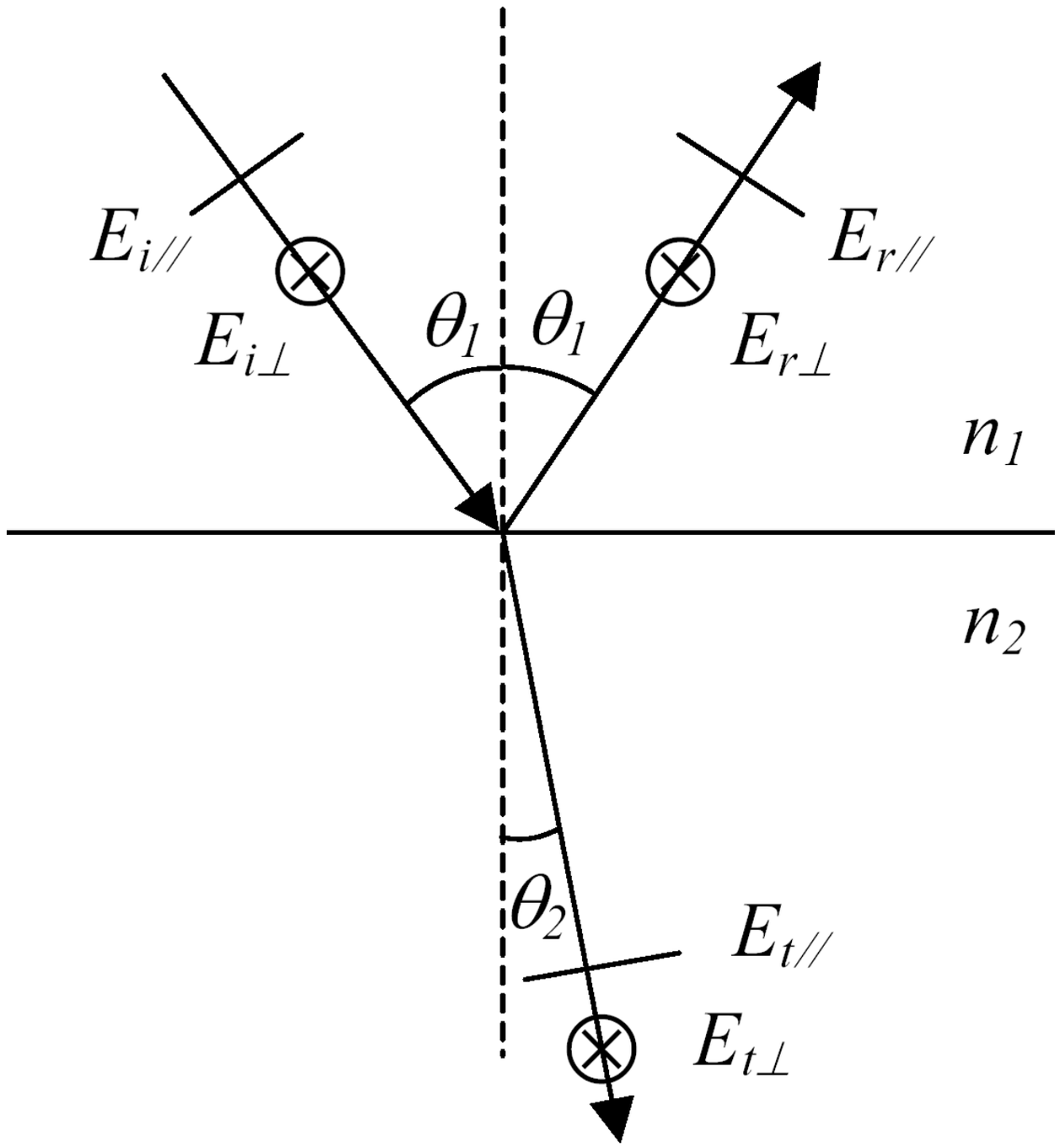

$E_{i//}$
$E_{i\perp}$
θ_1
θ_1
$E_{r//}$
$E_{r\perp}$
n_1
n_2
θ_2
$E_{t//}$
$E_{t\perp}$

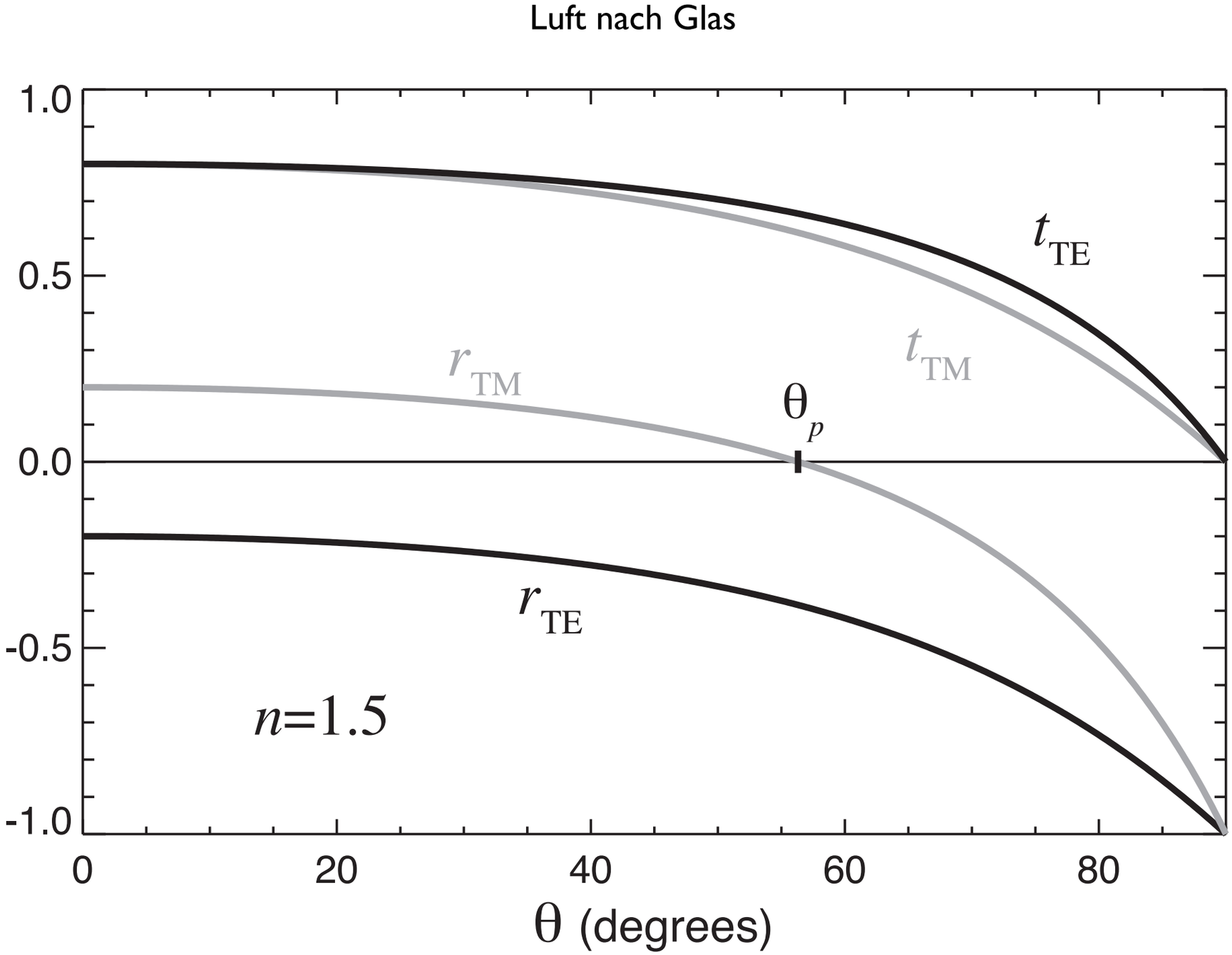
Fresnel equations

$$r_{\parallel} = E_{0r\parallel}/E_{0i\parallel} = \frac{n_1\ cos\theta_2 - n_2\ cos\theta_1}{n_1\ cos\theta_2 + n_2\ cos\theta_1} = -\frac{tan(\theta_1 - \theta_2)}{tan(\theta_1 + \theta_2)} \quad (1)$$

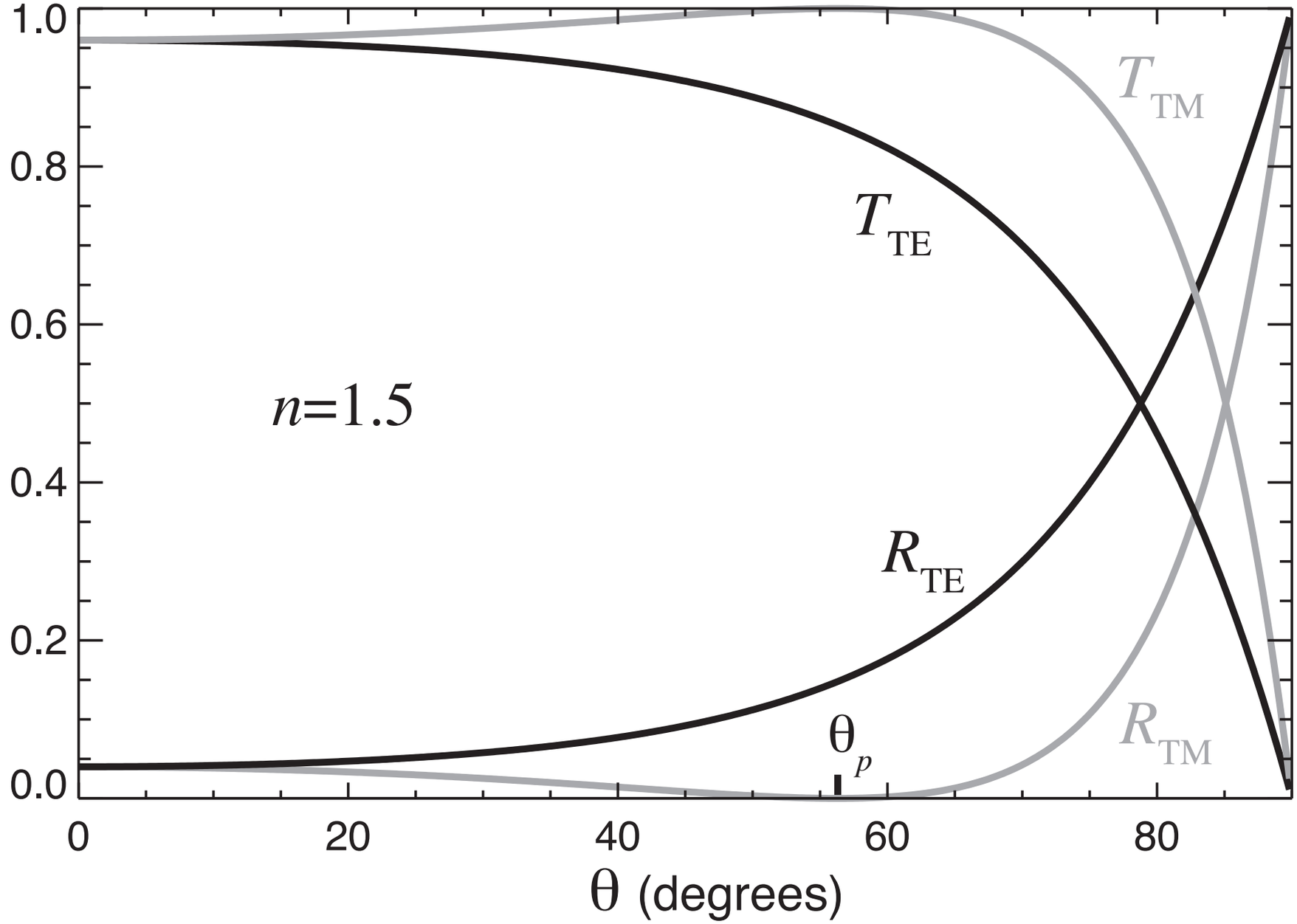
$$r_{\perp} = E_{0r\perp}/E_{0i\perp} = \frac{n_1\ cos\theta_1 - n_2\ cos\theta_2}{n_1\ cos\theta_1 + n_2\ cos\theta_2} = -\frac{sin(\theta_1 - \theta_2)}{sin(\theta_1 + \theta_2)} \quad (2)$$

$$t_{\parallel} = E_{0t\parallel}/E_{0i\parallel} = \frac{2n_1\ cos\theta_1}{n_1\ cos\theta_2 + n_2\ cos\theta_1} = \frac{2\ sin\theta_2\ cos\theta_1}{sin(\theta_1 + \theta_2)\ cos(\theta_1 - \theta_2)} \quad (3)$$

$$t_{\perp} = E_{0t\perp}/E_{0i\perp} = \frac{2n_1\ cos\theta_1}{n_1\ cos\theta_1 + n_2\ cos\theta_2} = \frac{2\ sin\theta_2\ cos\theta_1}{sin(\theta_1 + \theta_2)} \quad (4)$$


Luft nach Glas
1.0
0.5
0.0
-0.5
-1.0
0
20
40
60
80
θ (degrees)
t_{TE}
t_{TM}
r_{TM}
r_{TE}
θ_p
n=1.5

Luft nach Glas



1.3 Reflection and Refraction of EM waves