I14PLANIDS

Normal incidence. Plane parallel plate, reflected and transmitted intensity depending on thickness for fixed wavelength.
The reflection coefficients are calculated from Fresnels formulas for $\theta = 0$
Refractive indices n1, n2 and n3 may all be different and the reflection coefficient for both surfaces are calculated.
The calculation of the fringe pattern is done depending on D for fixed λ, .

$\Delta = 2\pi/\lambda \ \ 2dn2$ $\qquad$ $\theta 1 := 1$

$n1 := 1 \quad n2 := 1.5 \quad n3 := 1$

$r12 := \dfrac{n2 - n1}{n2 + n1}$ $\qquad$ $r23 := \dfrac{n3 - n2}{n3 + n2}$ $\qquad$ $\Delta = 2\pi/\lambda \ \ 2dn2 \cos \theta 2$

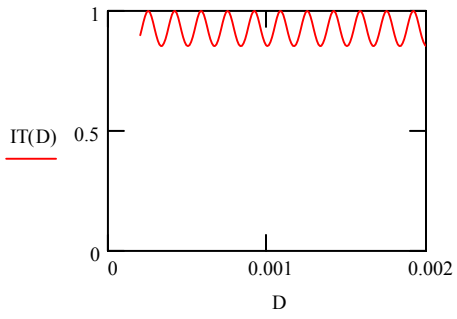
$r12 = 0.2$ $\qquad$ $r23 = -0.2$

$\lambda \equiv .0005$ $\qquad$ $D \equiv .0002, .00021 .. .002$

$$IT(D) := \frac{\left(1 - r12^2\right)\cdot\left(1 - r23^2\right)}{1 + (r12\cdot r23)^2 - (2\cdot r12\cdot r23)\cdot\cos\left(4\cdot\pi\cdot\frac{D}{\lambda}\cdot n2\right)}$$

$$IR(D) := 1 - IT(D)$$

Transmitted pattern



Reflected pattern