

1. Consider a plane wave incident on a thin wedged prism, as shown. The wedge angle is  $\alpha \ll 1$  and its index of refraction is  $n$ .

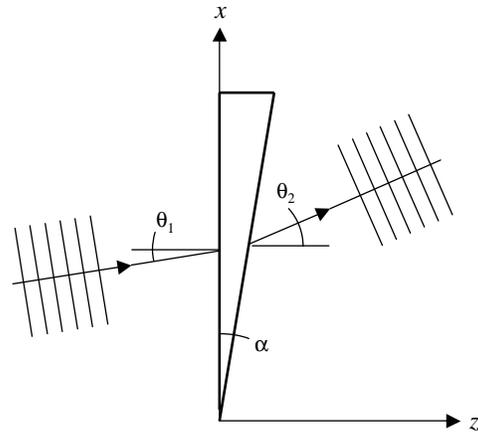
(a) Determine the amplitude  $U(x, z)$  corresponding to an incident plane wave at small angle  $\theta_1$  as shown. Use the paraxial approximation.

(b) Calculate the complex amplitude transmittance of the prism  $t(x, y)$ .

(c) Find the angle at which the transmitted wave propagates.

(d) Calculate the analogous deflection angle predicted in ray optics.

(cf. Saleh and Teich, Exercise 2.4-1, page 57.)



2. Saleh and Teich, Exercise 2.4-4, page 60.

3. Saleh and Teich, Problem 2.5-1, page 79.

4. Saleh and Teich, Problem 2.5-3, page 79.

5. Saleh and Teich, Exercise 2.5-3, page 69.