

OPTI 500E, HOMEWORK #3

Due March 28, 2012

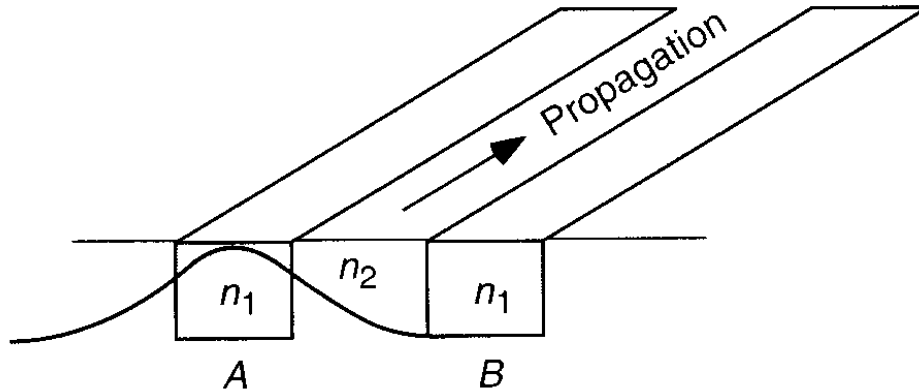


Figure 10.9 A directional coupler can be made by placing two waveguides in close proximity to one another for a finite distance. The evanescent field from one waveguide overlaps the core of the second waveguide, leading to coupling.

From Fundamentals of Optoelectronics, Pollock

Show that the field amplitude equations $\frac{\partial A}{\partial z} = -j\kappa B$ and $\frac{\partial B}{\partial z} = -j\kappa A$ mean that optical power launched into waveguide A at $z = 0$ will transfer completely to B in a distance $\pi/2\kappa$.