

Scattering in a 2-D Optical Waveguide

Rolando Magnanini ^{*} Fadil Santosa [†]

March 13, 2000

Abstract

We consider the problem of scattering in a planar optical waveguide. An incident wave, in the form of a guided mode, is sent along the waveguide. It encounters an inhomogeneity in the core region of the waveguide, and is scattered. We use the Green's function for the planar waveguide to derive a Lippman-Schwinger equation. We show that the integral equation admits a unique solution. The scattering problem is solved under the Born approximation in several numerical examples.

^{*}Dipartimento di Matematica U. Dini, University of Firenze, viale Morgagni 67/A, 50134 Firenze, Italy

[†]School of Mathematics, University of Minnesota, Vincent Hall, 206 Church St, Minneapolis, MN 55455, USA