

The scatter of an incident TE_0 mode at a step-discontinuity separating linear and nonlinear waveguides is studied. Under certain conditions the self-focusing nonlinearity is shown to strongly modify the scattered field in comparison with the linear counterpart. The stronger effects are shown to occur when the nonlinear waveguide is operated in the cut-off condition at low power while supporting a nonlinear guided mode at high power. The method of lines is used in modeling the structure.