

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Input Pulse Response in Nonlinear Transmission Line¹ IAN M. RITTERSDORF, DAVID M. FRENCH, MICHAEL JOHNSON, Y.Y. LAU, RONALD M. GILGENBACH, University of Michigan, DONALD SHIFFLER, BRAD HOFF, Air Force Research Laboratory, JOHN LUGINSLAND, Air Force Office of Scientific Research — Nonlinear transmission lines have been demonstrated to be an effective technique for generating high power ultrawideband or mesoband radiation without the need for a vacuum system, electron beam, or magnet. Experiments have been performed at UM on a discrete element nonlinear transmission line that uses ferrite inductors as the nonlinear element. Pulse sharpening of multi-kA input pulses has been observed in addition to the generation of oscillations at the characteristic LC frequency. The response to various input pulses to excite a single inductor on a single stage of the nonlinear transmission line, which may consist of a linear capacitor and a nonlinear inductor, will be modeled. Also studied is the pulse response to a nonlinear telegraphic equation. Results of these modeling efforts as well as experimental results performed at UM will be presented.

¹Research supported by AFOSR. DMF was supported by an NDSEG fellowship.

Ian M. Rittersdorf
University of Michigan

Date submitted: 17 Jul 2010

Electronic form version 1.4