Abstract Submitted
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Experiments and Simulations on a Discrete Element Nonlinear Transmission Line[1] DAVID FRENCH, University of Michigan, DON SHIFFLER, Air Force Research Laboratory, JOHN LUGINSLAND, Numerex, RONALD GILGENBACH, Y.Y. LAU, University of Michigan — 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. Preliminary experiments have been performed at AFRL and UM on a discrete element nonlinear transmission line with nonlinear capacitance. Depending on the injected pulse, either pulse sharpening or RF generation could be observed. The differences between these two cases and the threshold for RF generation will be discussed. Time frequency analysis has been applied to analyze the generated RF spectrum. These effects were reproduced in circuit simulations. Results from these preliminary experiments and plans for future high power nonlinear transmission line experiments using LTD technology at UM will be presented.

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