1093-78-113 **Natalie Cartwright*** (`cartwrin@newpaltz.edu`). *Propagation of Pulses in a Lossy Plasma.* Preliminary report.

Asymptotic methods are used to provide an asymptotic approximation, valid for large propagation distances z, of an electromagnetic pulse traveling through a lossy plasma. The plasma is modeled by a causal dielectric permittivity that exhibits both dispersion and attenuation. The input pulse considered is a rectangular-modulated signal with either a fixed carrier frequency or linearly-chirped frequency. The asymptotic expressions are obtained on any plane $z > 0$ from the integral representation of the propagated field

$$E(z,t) = \frac{1}{2\pi} \int_{ia-\infty}^{ia+\infty} \tilde{E}(0,\omega) \exp\left[i\tilde{k}(\omega)z - i\omega t \right]. \tag{1}$$

Here, a is greater than the abscissa of absolute convergence of the input pulse $E(0,t)$, $\tilde{E}(0,\omega)$ is the initial pulse spectrum, and $\tilde{k}(\omega) = (\omega/c)\sqrt{\epsilon(\omega)}$ is the complex wave number, with c denoting the speed of light in vacuum. A relative magnetic permeability $\mu = 1$ is assumed. The propagated signal is seen to be the sum of three components: the high, low, and carrier frequency responses of the material to the applied field. We consider matched filters based on these three components, and their effect on pulse compression. (Received August 06, 2013)