



"ordering-disordering process" impulse response

Total response to a time varying  $\bar{E}$  Field is a convolution

$$\bar{P}(\bar{r}, t) = \epsilon_0 \int_{-\infty}^t dt_1 \bar{E}(\bar{r}, t_1) f(t-t_1)$$

Relationship of  $\bar{E}$  &  $f$  time variations determines behavior of medium

$f$  much faster than  $\bar{E}$   $\rightarrow$  non-dispersive (narrow band)

$\bar{E}$  much faster than  $f$   $\rightarrow$  non-dispersive (narrow band)

same order  $\rightarrow$  dispersion