WAVE FORMS & SOURCES

GAUSSIAN PULSE

$$E_x(z) = \exp\left[-\frac{1}{2}\left(\frac{to - t}{SPREAD}\right)^2\right]$$

SEE GAUSSIAN.M

SPREAD = PULSE WIDTH
to = DELAY
t = TIME INTERVAL #
z = CELL #

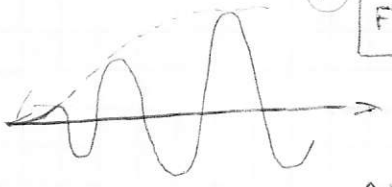
SINUSOIDAL SOURCES

IT IS BETTER TO 'EASE' THE SINUSOID BY MODULATING ITS ENVELOPE. THIS IS DONE BY MULTIPLYING IT BY OTHER FUNCTION, FOR EXAMPLE, A SIGMOID.

SEE SIGMOID.M
FDTD1D SINE2.M

FOR INSTANCE,

$$P(t) = \frac{1}{1+e^{-t}}$$

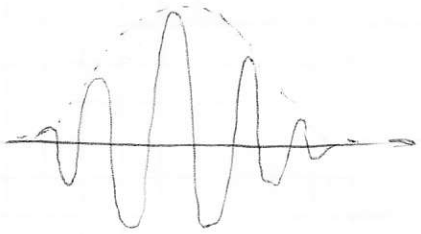


AND SHIFTED

THIS FUNCTION NEEDS TO BE APPROPRIATELY SCALED TO MATCH OUR FREQUENCY, SO THE ENVELOPE RISES OVER ONE OR TWO FULL CYCLES.

WAVE PACKET

SOMETIMES IS USEFUL TO HAVE A WAVE PACKET. IT CAN BE OBTAINED BY MULTIPLYING A GAUSSIAN PULSE WITH A SINUSOID



SEE PACKET.M