

## Quadrature Detection: The FID in Stereo

- The Audio FID Signal Can Have Positive or Negative Frequency (e.g. -2000 to +2000 Hz)
- To Distinguish Positive from Negative Frequencies, Two Audio Signals are Produced from the Radio Frequency FID During the Subtraction Process
- These are Called the Real (or X-axis) and Imaginary (or Y-axis) FIDs. They are 90 Degrees Out of Phase:

Real (X):  $\pm\mathbf{sin}$  function of time

Imaginary (Y):  $\pm\mathbf{cos}$  function of time

- If the X Signal Leads Ahead of the Y Signal by 90 Degrees, the Frequency is Positive (left half of spectrum)
- If the X Signal Lags Behind the Y Signal by 90 Degrees, the Frequency is Negative (right half of spectrum)