



AMPLITUDE MODULATION

Synthesis techniques based on signal multiplication

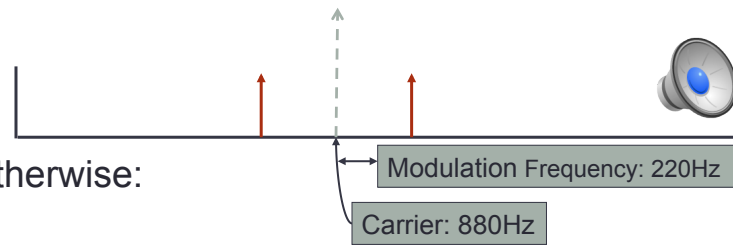


Amplitude Modulation

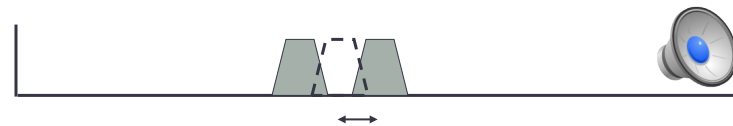
- Amplitude modulation is simply multiplication (MULT in Nyquist)
- Amplitude modulation (multiplication) in the time domain corresponds to convolution in the spectral domain (!)
- For each sinusoid in the modulator, the modulated signal is shifted up and down by the frequency of the sinusoid.

AM spectra

- Assuming the modulated signal is a sinusoid:



- Otherwise:



Ring Modulation

- Ring Modulation is named after the “ring modulator,” an analog approach to signal multiplication.
- See `code_3.htm` for AM examples

Constant Offset

- What is the difference between:
 $\text{lfo}(6)$
- And
 $2 + \text{lfo}(6)$
- ?

Summary

- Dithering sometimes used to avoid quantization artifacts
- Oversampling is standard technique to move (some) filtering to the digital domain
- Amplitude Modulation by a sinusoid shifts the spectrum up and down by the frequency of the modulator