INTRODUCTION TO COMPUTER MUSIC

FM SYNTHESIS

A classic synthesis algorithm

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Frequency Modulation

• Frequency modulation occurs naturally:
  • Voice inflection, natural jitter, and vibrato in singing
  • Vibrato in instruments
  • Instrumental effects, e.g. electric guitar
  • Many tones begin low and come up to pitch
  • Loose vibrating strings go sharp as they go louder
  • Slide trombone, Theremin, voice, violin, etc. create melodies by FM (as opposed to, say, pianos)
Frequency Modulation with Nyquist

- \texttt{fmosc(basic-pitch, fm-control [, table [, phase]]})
  - \textit{fm-control} is expressed as deviation in Hz

- \texttt{hzosc(fm-control)}
  - \textit{fm-control} is absolute frequency in Hz

- \texttt{snd-compose(f, g)}
  - Computes \( f(g(t)) \) – if \( g \) is non-linear, frequency changes occur