

Intro Acoustics 3:11

Extra Readings. Musical Acoustics

Terms and outline

Musical Instruments: mechanical, electronic, electromechanical

Spectral characteristics

Transients

attack, steady state, decay

Dynamic range

Uncertainty

vibrato: frequency modulation

tremolo: amplitude modulation

Musical Acoustics

Musical Instruments: mechanical, electronic, electromechanical

Excitation

Resonator

Radiator

Spectral characteristics

Formant frequencies

Transients

 attack, steady state, decay

Dynamic range

Uncertainty

 vibrato: frequency modulation

 tremolo: amplitude modulation

 choral effects

Musical Instruments: mechanical, electronic, electromechanical

mechanical: families

string 60%

woodwind (15%)

brass (15%)

percussion (15%)

electronic: signal generator modified with electronic oscillators and filters

electromechanical: electric violin, guitar

Spectral characteristics

in families... Brassy bright vs fluty

transients

Transients

attack, steady state, decay

percussion don't have steady states.

Larger instruments... larger attacks

Dynamic range

Uncertainty (variability in music is more interesting)

vibrato: frequency modulation

tremolo: amplitude modulation

choral effects