

- o Magnetic wire and tape recorders (analog & digital)
- o Digital recording (e.g. to CD, DVD, etc.)
- o Analog input transducers - condenser and dynamic microphones
- o Analog output transducers - loudspeakers
- + Music in the near-term and distant future
 - o Human music - culture & society. New kinds?
 - o Development of new kinds of musical instruments & technology.
 - o Evolution of music in animals? Human - animal music interactions?
- + Sound Analysis Methodology & Analysis of Musical Sounds
 - o Complex Harmonic Sound Fields – Euler’s eqn., complex immittances, sound intensity, linear and angular momentum density, group and phase velocity, energy density.
 - o Examples of Complex Sound Fields – near & far fields of acoustic monopole, dipole, quadrupole, ... planar circular piston on oo-baffle...
 - o Harmonic/Fourier Analysis/Fourier Synthesis – complex waveforms
 - o Pressure and Particle Velocity Transducers
 - o Phase Sensitive Measurements – Lock-In Amplifier Techniques
 - o Near-Field Acoustic Holography – modal vibrations of drums, cymbals, acoustic guitars, etc.
 - o Spectral Analysis Techniques – continuous & discrete Fourier transforms, FFTs, convolution, correlation, autocorrelation, cross-correlation, Wiener-Khinchine theorem, power spectral density, coherence function
 - o Digital Signal Processing/Digital Filtering
 - o Wavelet Analysis
- Physics of Electric Guitar Pickups, modeling EM properties of electric guitar pickups
- Physics of Loudspeakers, modeling of acoustic and EM properties of loudspeakers
- $1/f$ Noise in Human Music
- Diversity/Universality of Human Music
- Sustainability & Environmental Issues for Musical Instruments
 - o Use of renewable natural resources for musical instruments – tonewoods....