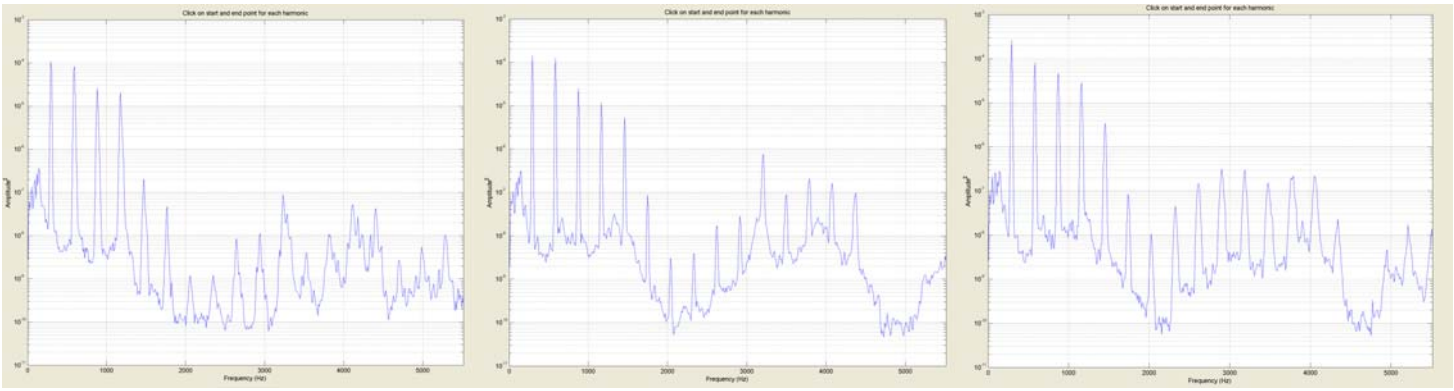
The Uniqueness of the Human Voice:

The harmonic content associated with musical notes sung by three women UIUC undergraduates were analyzed using the Matlab-based wav_analysis program {Please see Abby Ekstrand's Physics 193POM Final Report, Spring Semester, 2007: http://courses.physics.illinois.edu/phys193/193_student_projects_spring07.html}

e.g. for the note D4 (f_{D4} = 293.7 *Hz*):

Amplitude^2 *vs.* Frequency:

Abby | Molly | Cheryl



Note the differences in formant/resonance regions in the above frequency spectra!

2-D Harmonic Amplitude/Phase Diagrams – the time-averaged SPL (dB) for each harmonic is represented by the ***length*** of each arrow & the time-averaged relative phase of each harmonic is represented by the ***angle*** of each arrow, relative to the horizontal axis, for each of the higher harmonics relative to the fundamental. The fundamental is always the blue arrow on the horizontal axis oriented @ 0 degrees.