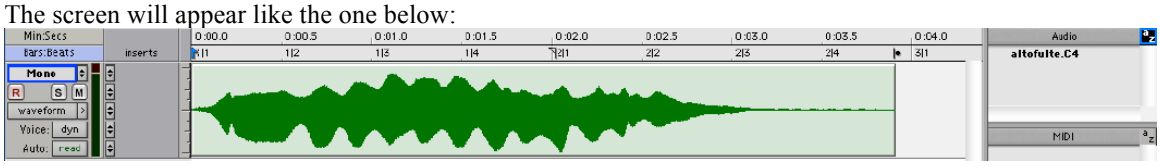
025:250 Composition: Electronic Media I
Oct. 31, 2005
Intro to Spectral Analysis

1. Background
   a. Jean-Baptiste Fourier, *On the Propagation of Heat in Solid Bodies* (1807)
   b. Any periodic wave can be represented as a sum of sine waves whose frequencies are integral multiples, and whose amplitudes and phases are properly adjusted.

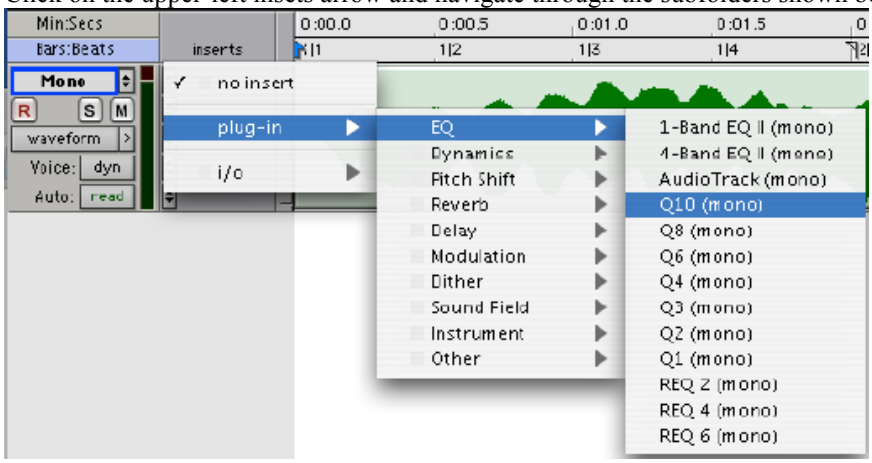
2. Fourier series for middle C, where f = 261.65 Hz

12f	3139.80 Hz	
11f	2878.15 Hz	
10f	2616.50 Hz	
9f	2354.85 Hz	
8f	2093.20 Hz	
7f	1831.55 Hz	
6f	1569.90 Hz	
5f	1308.25 Hz	
4f	1046.60 Hz	
3f	784.95 Hz	
2f	523.30 Hz	
1f	261.65 Hz	C4

1. Launch **Pro Tools** and set up the edit window as follows:
   a. Import a mono file.
   b. Create a mono track.
   c. Drag the mono file from the region list into the mono track.
   d. Select Display>Edit Window Shows>Inserts View
   e. The screen will appear like the one below:



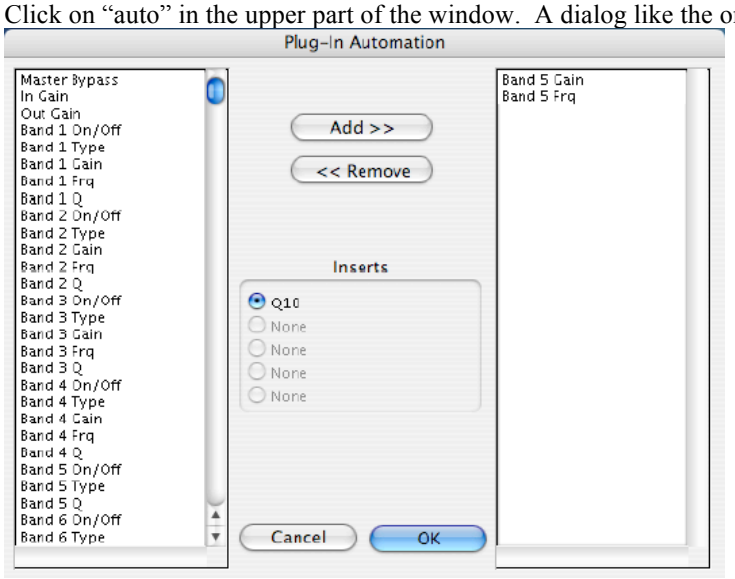
2. Click on the upper-left insets arrow and navigate through the subfolders shown below:



   a. Select Plug-in>EQ>Q10 (mono). A window like the one below will appear:

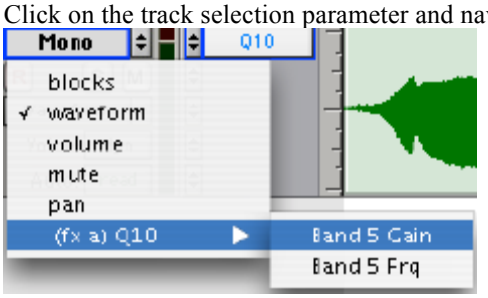
Mono
a
Q10
bypass
RTAS
<factory default>
compare
auto
safe
Undo
Setup A
A->B
Load
Save
Flat
?
WAVES
21
18
15
12
9
6
3
0
-3
-6
-9
-12
-15
-18
-21
1
2
3
4
5
6
7
8
9
10
16
31
62
125
250
500
1000
2000
4000
8000
16000
Input
0.0
On/Off
Type
Gain
Freq
Q
0.0
31
7.0
0.0
62
7.0
0.0
125
7.0
0.0
250
7.0
0.0
500
7.0
0.0
1000
7.0
0.0
2000
7.0
0.0
4000
7.0
0.0
8000
7.0
0.0
16000
7.0
Output
0.0
Trim
12.0
Output
0
3
6
12
15
18
21
24
27
30
-oo
Q10 Paragraphic Equalizer

b. Click on “auto” in the upper part of the window. A dialog like the one below will apppear:

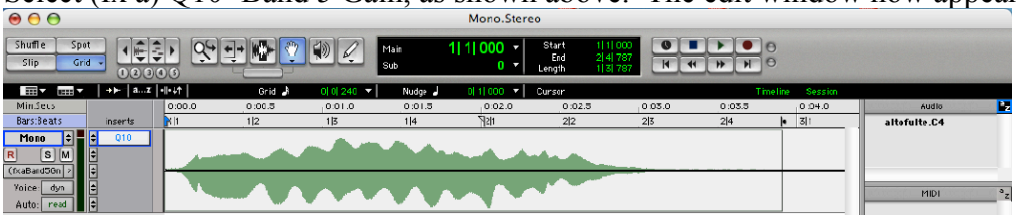


Select the parameters on the left that you wish to automate by double-clicking. They will appear in the “add” column, as shown above. Click OK.

c. Click on the track selection parameter and navigate through the subfolders shown below:



Select (fx a) Q10>Band 5 Gain, as shown above. The edit window now appears like the one below:



Note that the automation line controls the gain for Band of the Q10 EQ. If Q10 is highlighted in the inserts window, the Q10 will be displayed and its actions will occur in realtime.