Mike Halling
12/4/91
PBAR NOTE

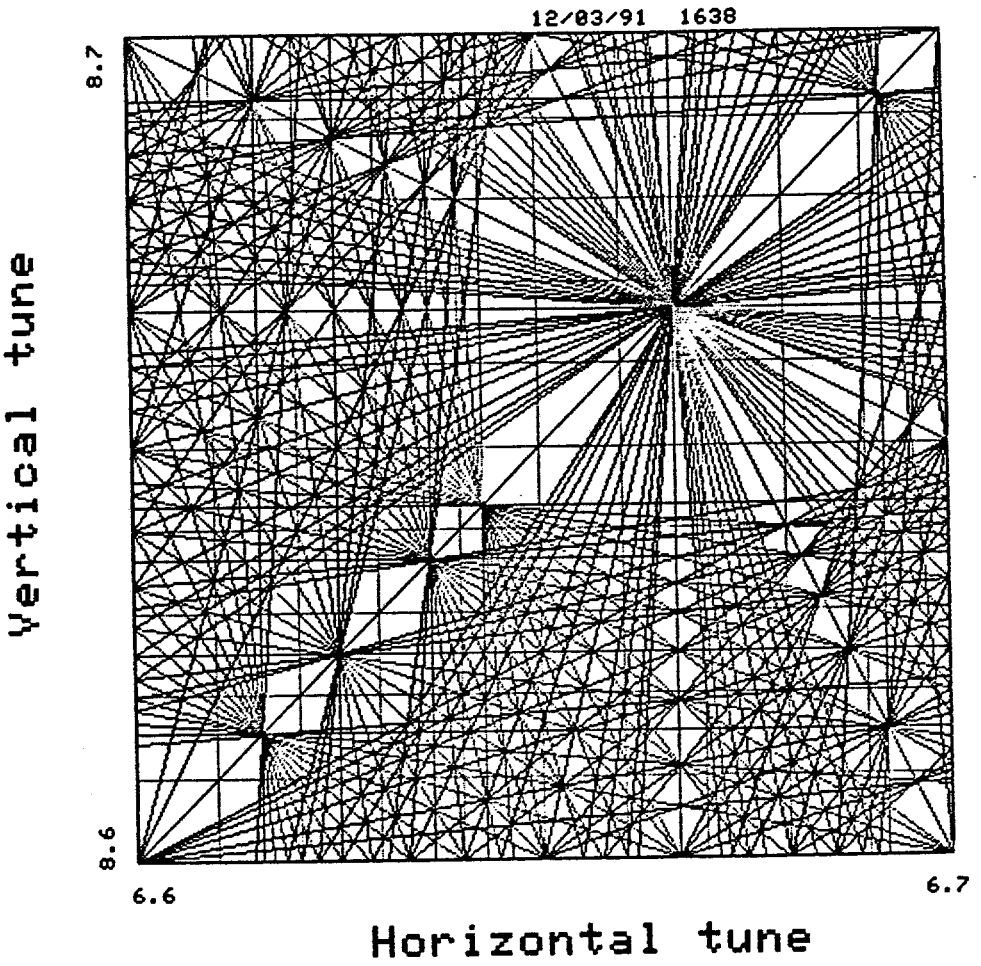
Identification of new operating tunes for the Accumulator

Our current operating tunes for the accumulator, 6.606 and 8.610, are so close together that it is almost impossible to eliminate coupling completely even at the core orbit, and all the other orbits are nearly 100% coupled. Not only does this make diagnostic information difficult to interpret, but it also reduces the transverse acceptance of the accumulator. I propose that we attempt to find another operating point farther away from the coupling resonance.

The attached plots show most of the operating range with a horizontal tune between 6.4 and 6.9, and a vertical tune from 8.4 to 8.9. Please note that the T128 program sometimes forgets to draw some resonance lines on the plot, so if a possible operating point is found it is necessary to plot it with several different scales to make sure that all the resonance lines are visible. The top plot shows our current operating point. The second plot shows a series of gaps near the tune 6.560 and 8.430. The third and fourth plots show a blowup of one of the identified gaps with resonances to 15th and 18th order displayed. The rest of the plots are included for completeness.

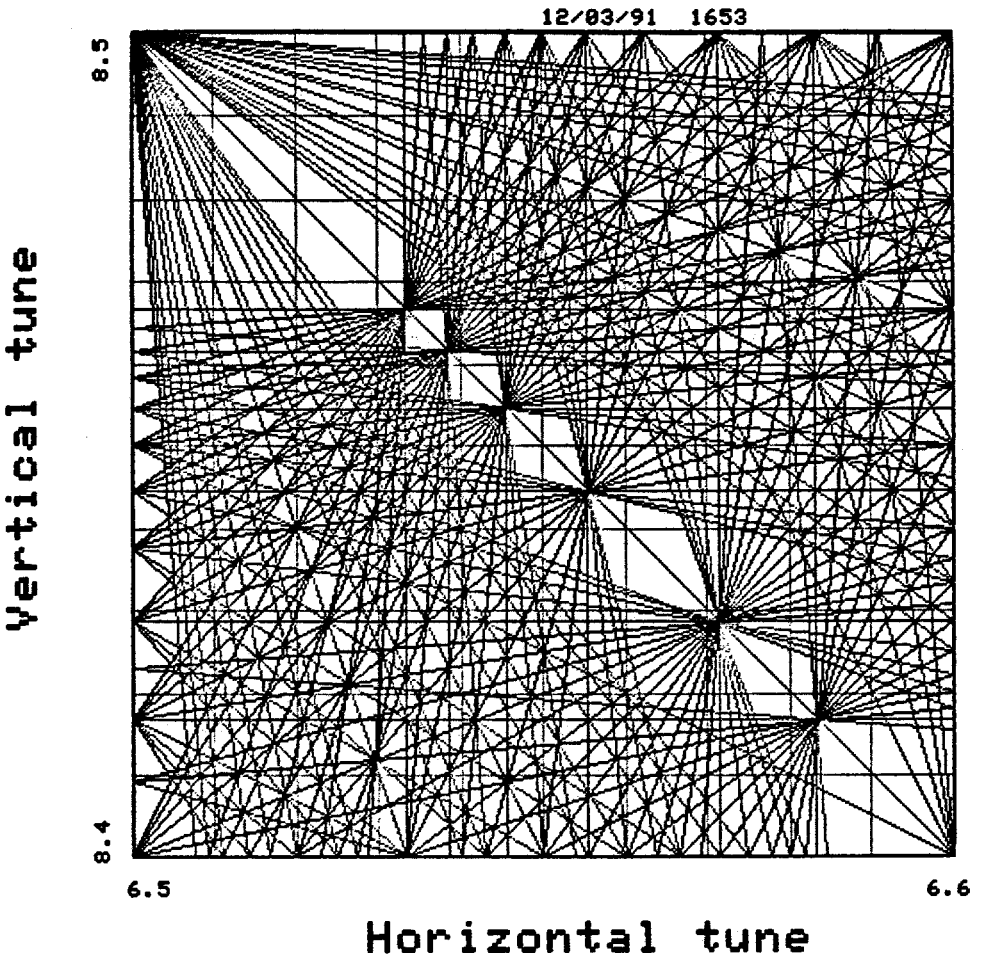
The operating point shown in the third plot gives about 60 times more separation from the coupling resonance than we now have. I think it would be worthwhile to spend a few shifts to identify the proper bus currents for this operating point. We should then try to stack at this point to see if there is any advantage to running without coupling.

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:39



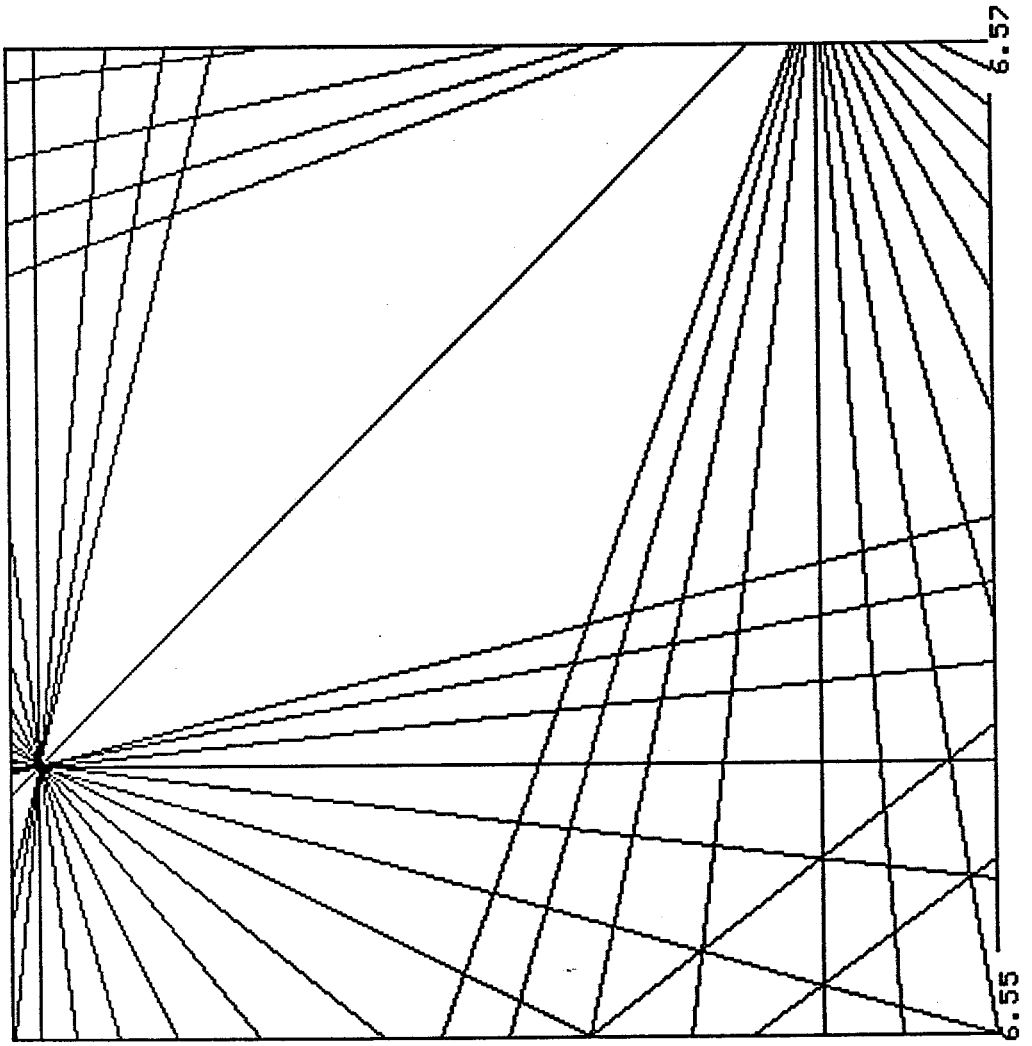
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:53

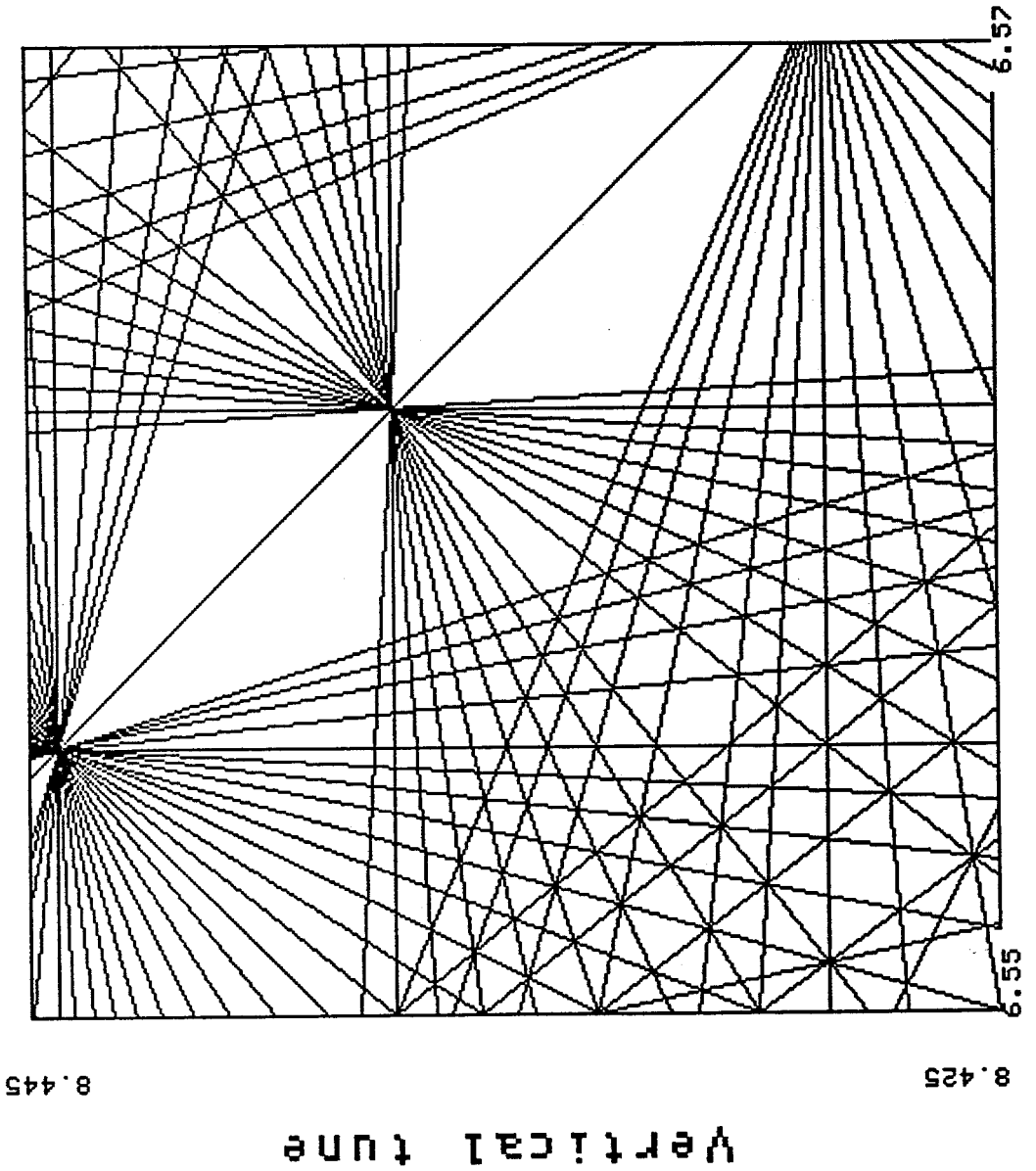


Resonances from order 1 to 15

CONSOLE LOCATION 28, Boo-NW 4-DEC-1991 12:48
Untitled

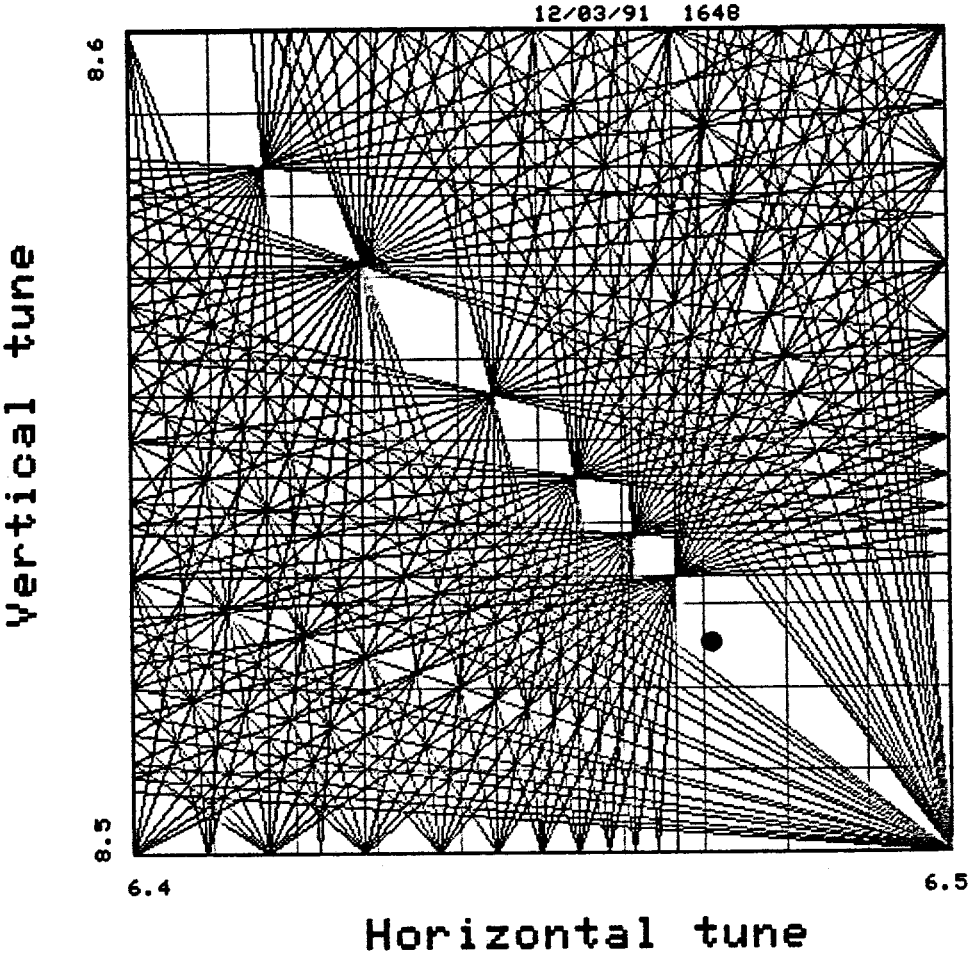


CONSOLE LOCATION 28, Boo-NW 4-DEC-1991 12:48
Untitled



Resonances from order 1 to 18

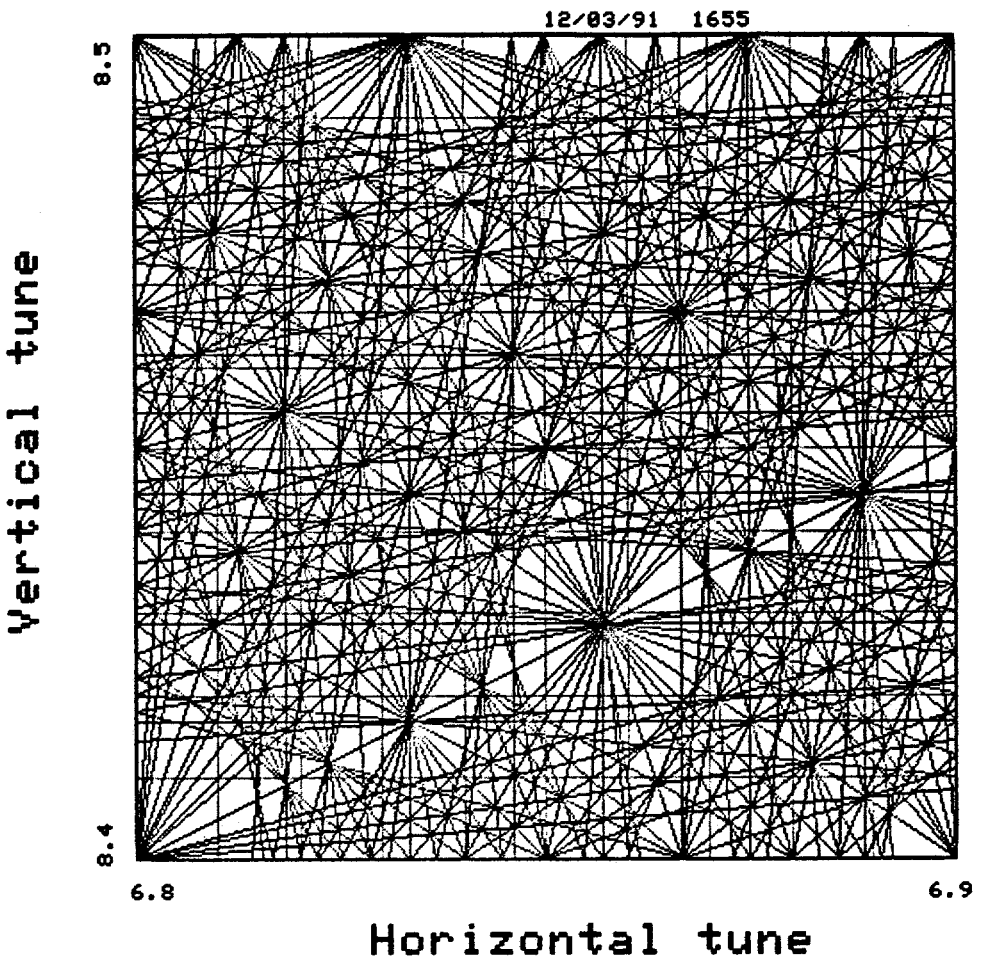
CONSOLE LOCATION 15, AP10 3-DEC-1991 16:49



Resonances from order 1 to 15

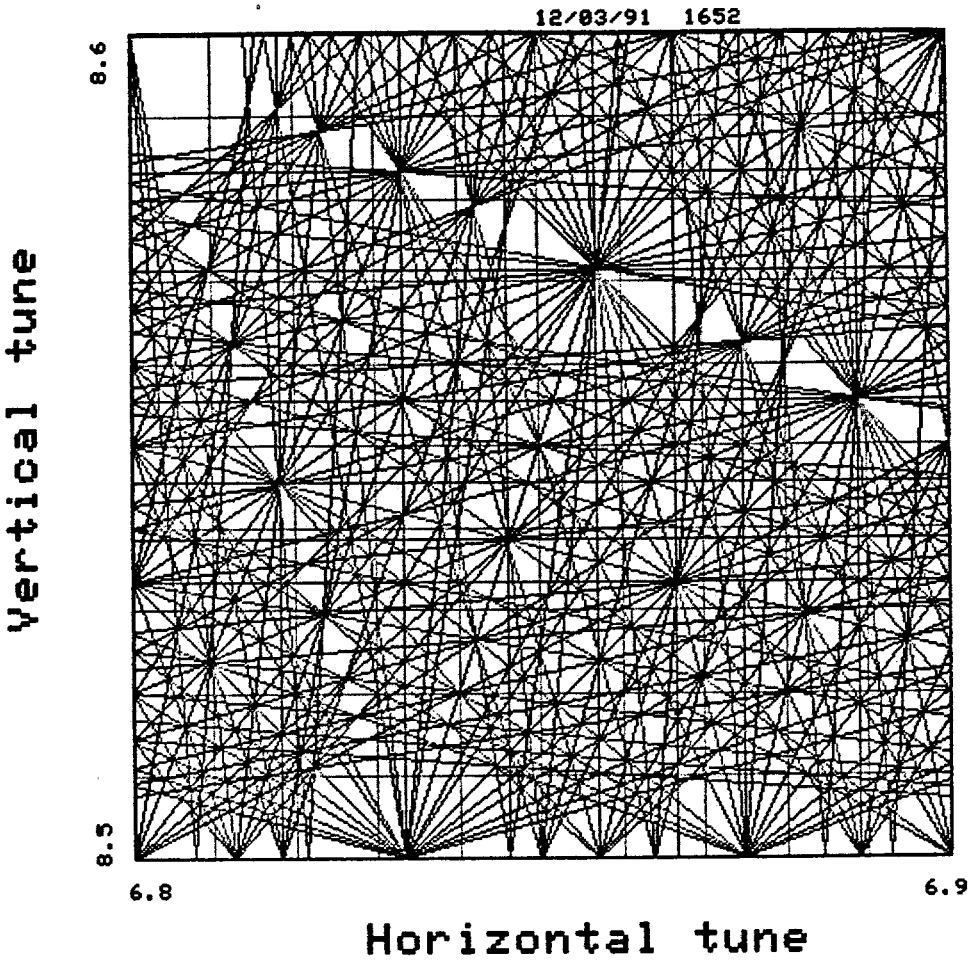
SEVERAL LINES MISSING!

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:55



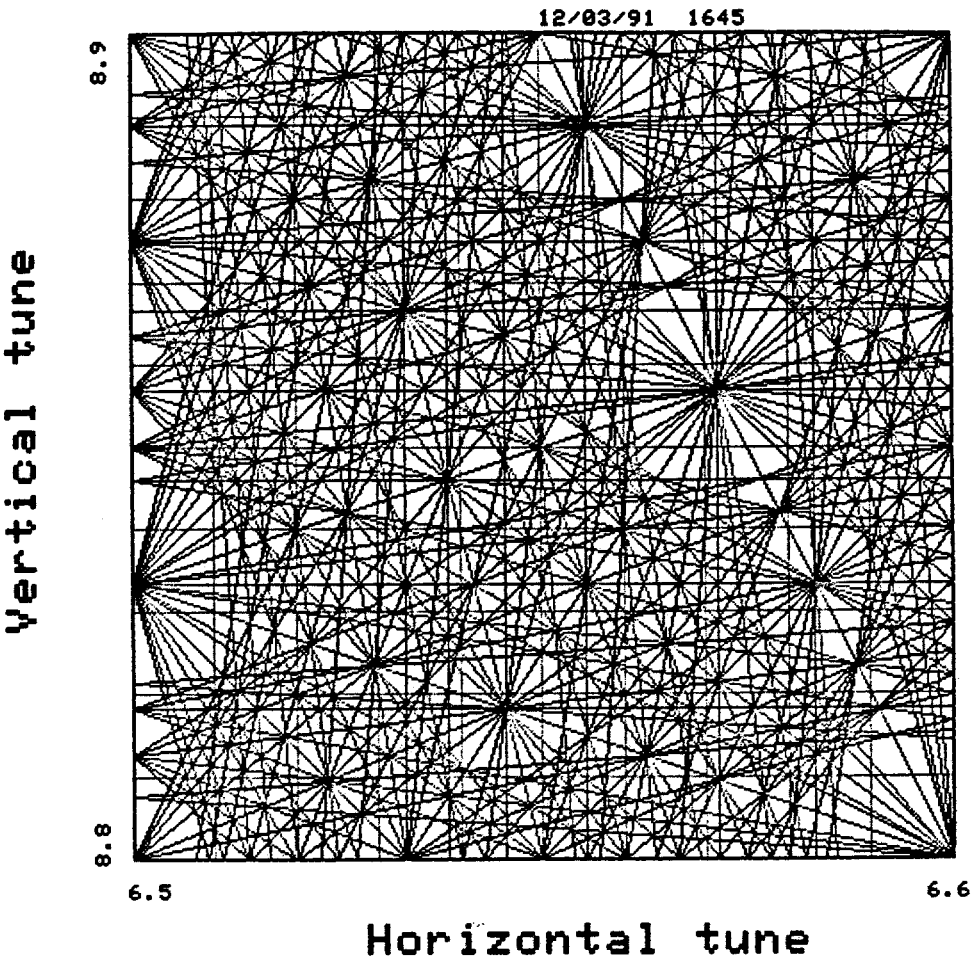
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:52



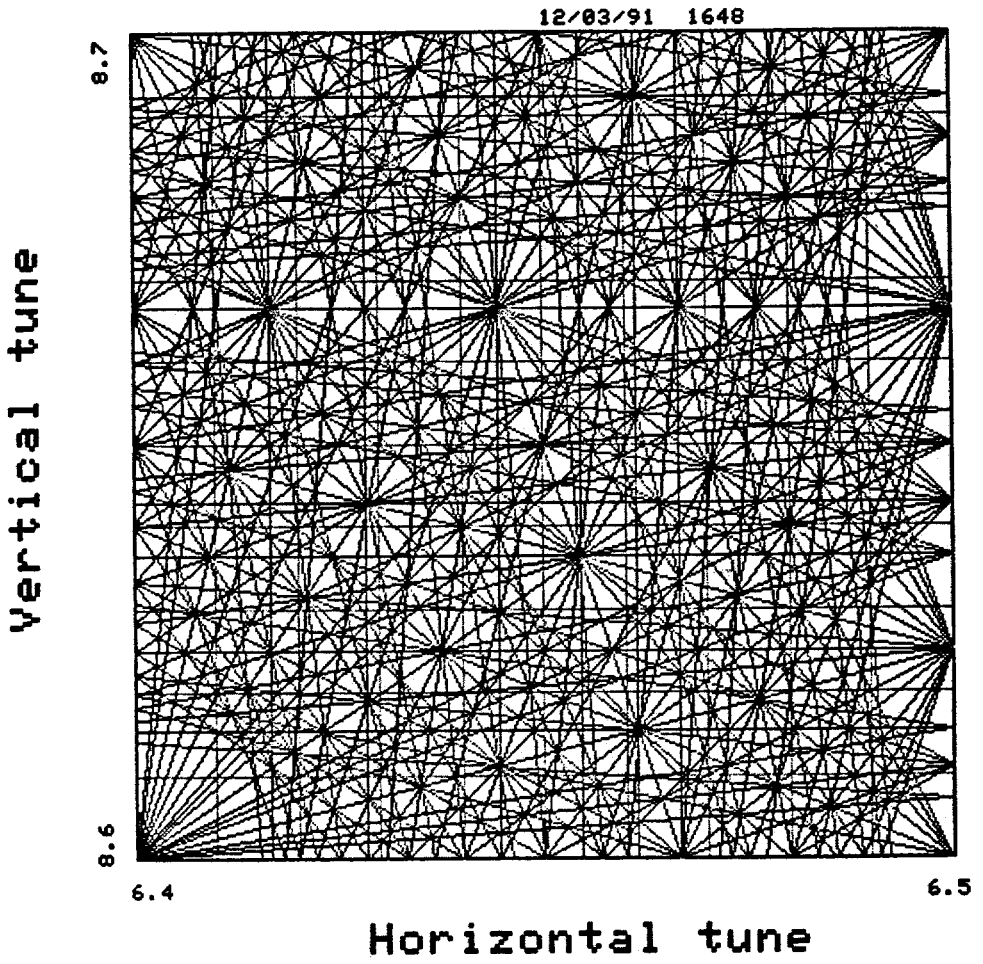
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:46



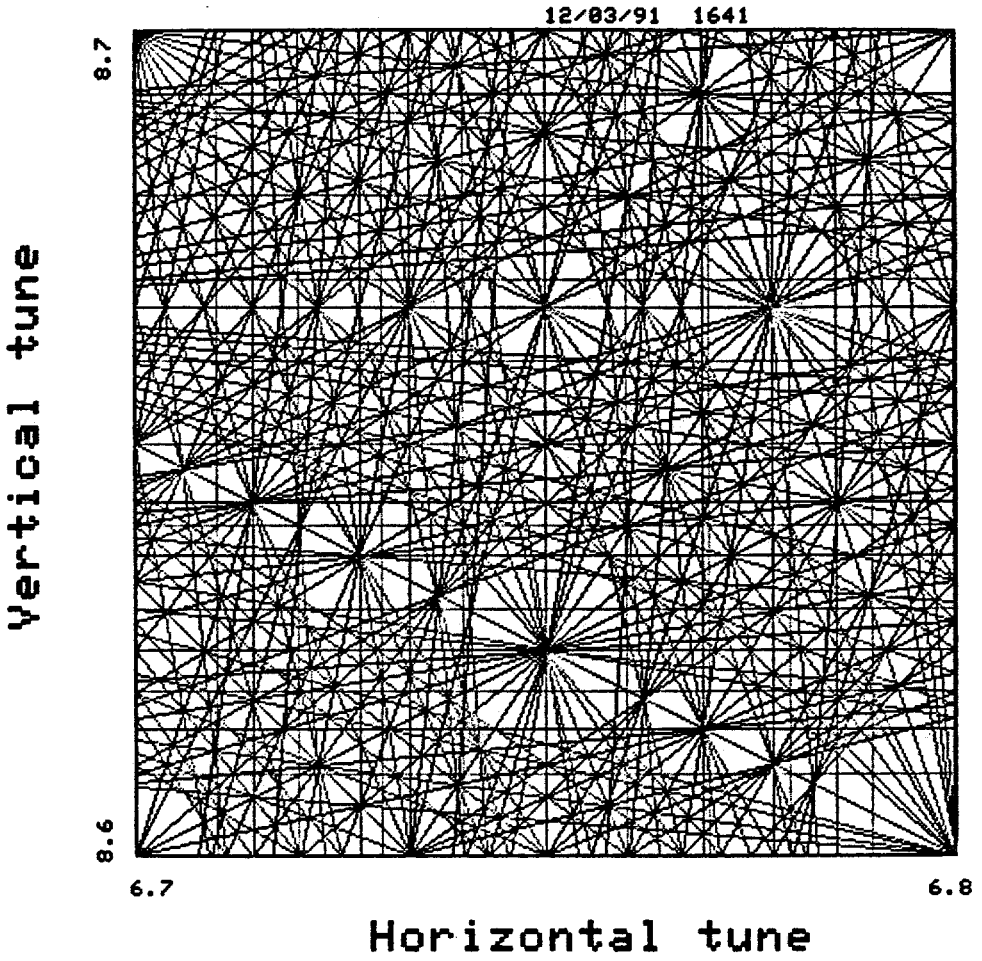
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:48



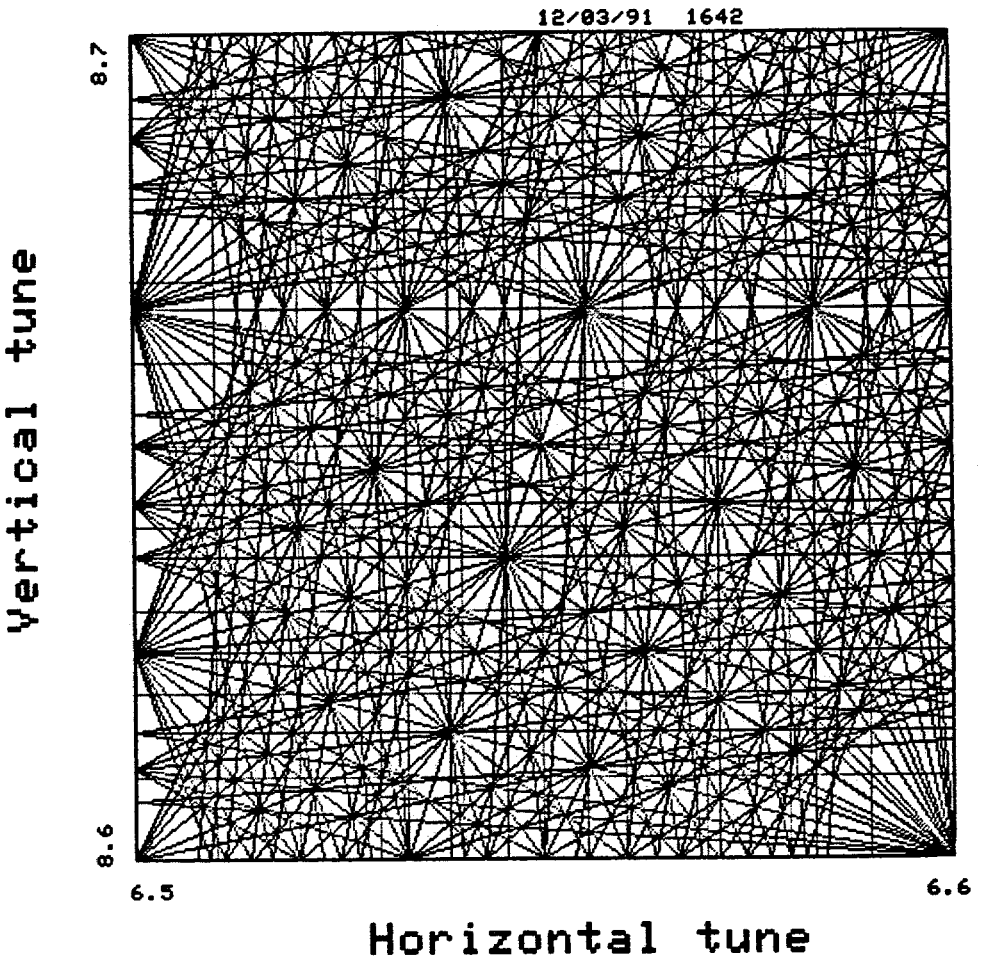
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:42



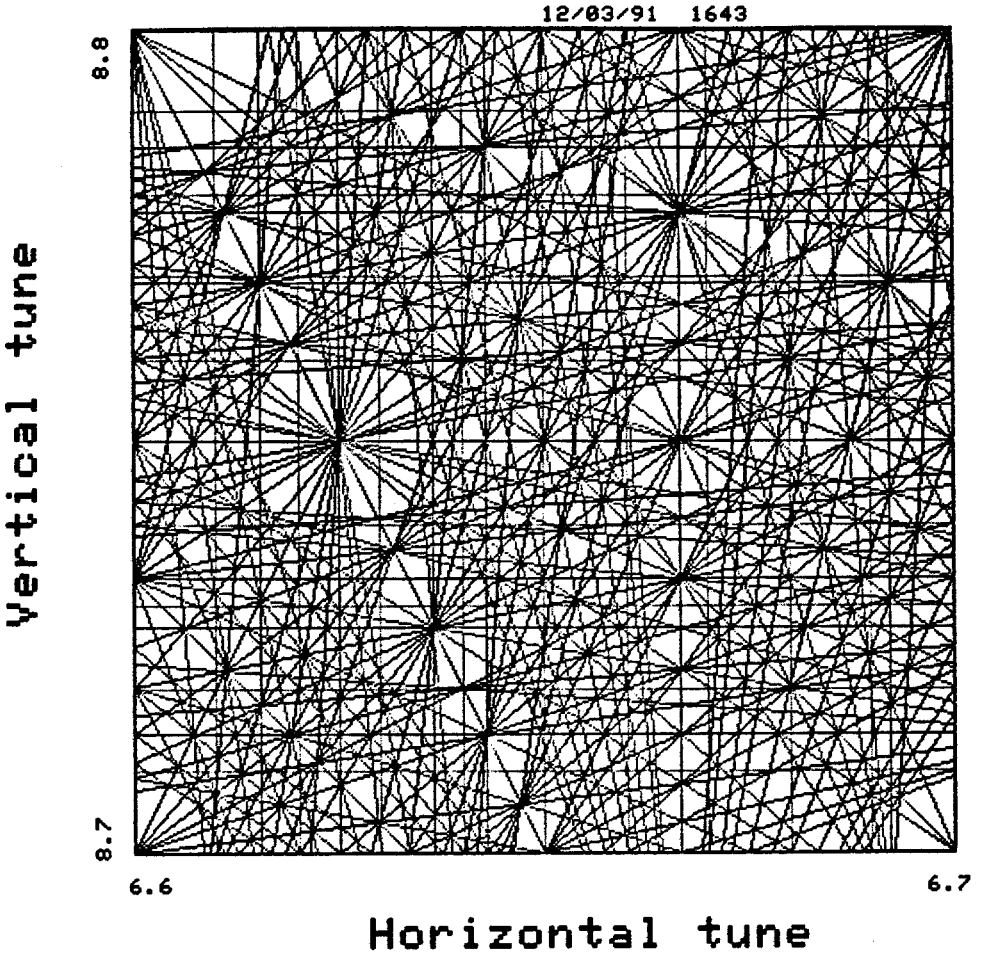
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:42



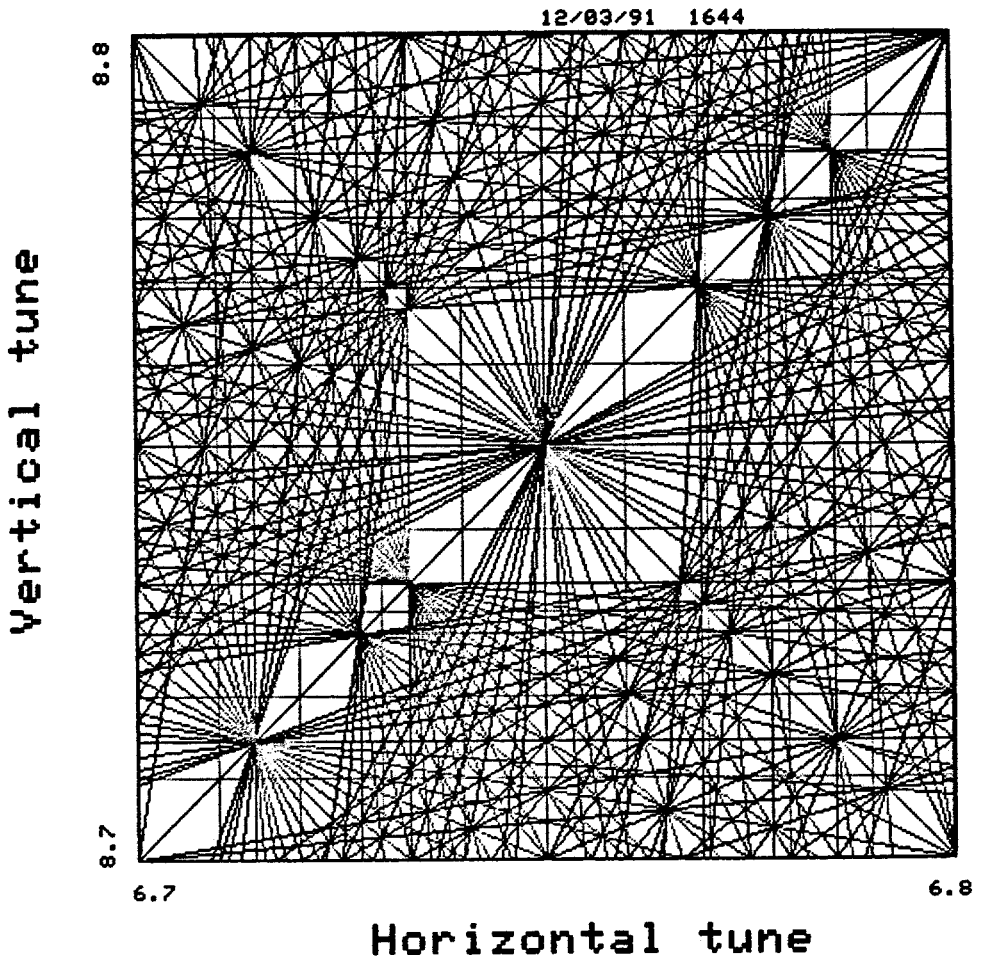
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:43



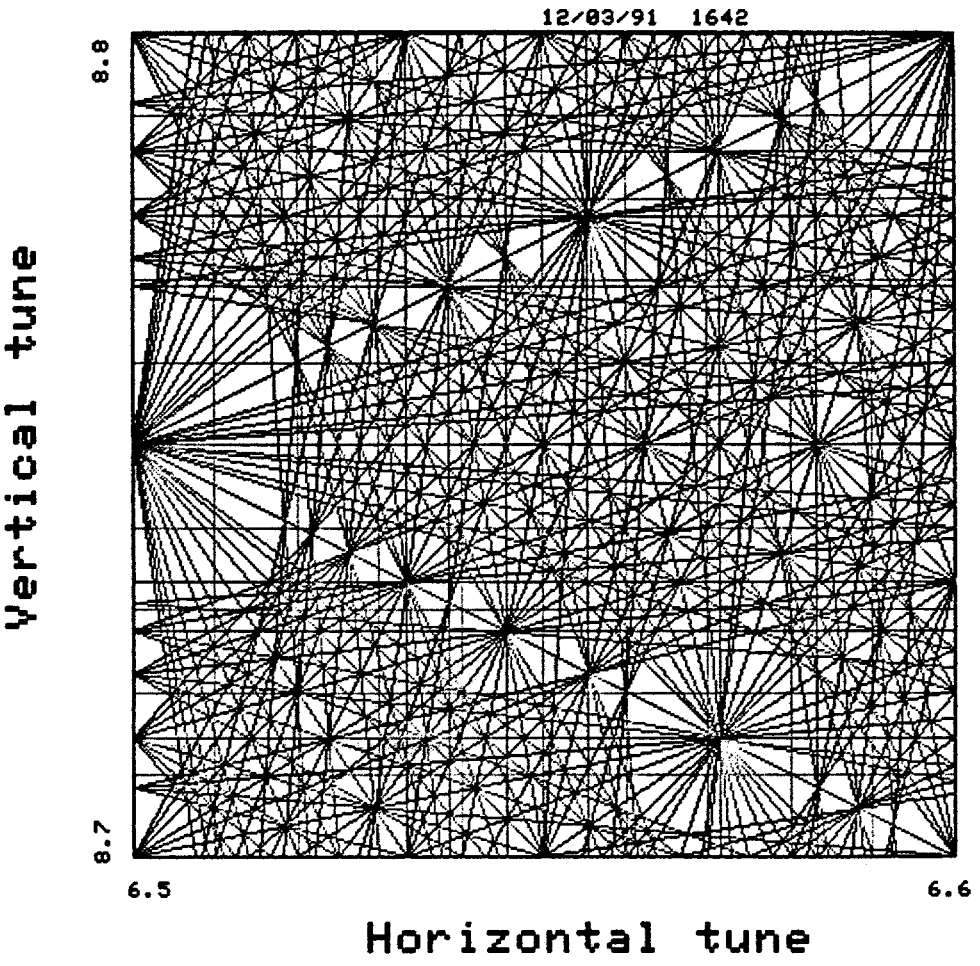
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:44



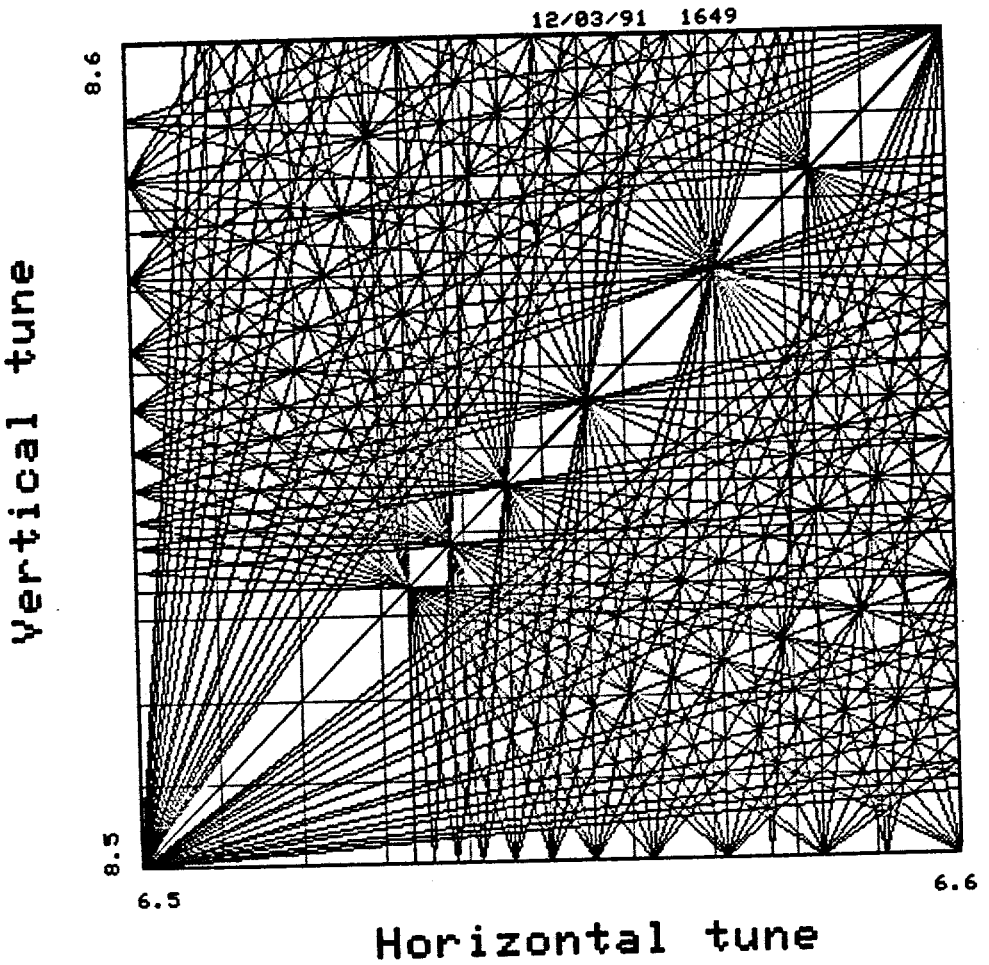
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:43



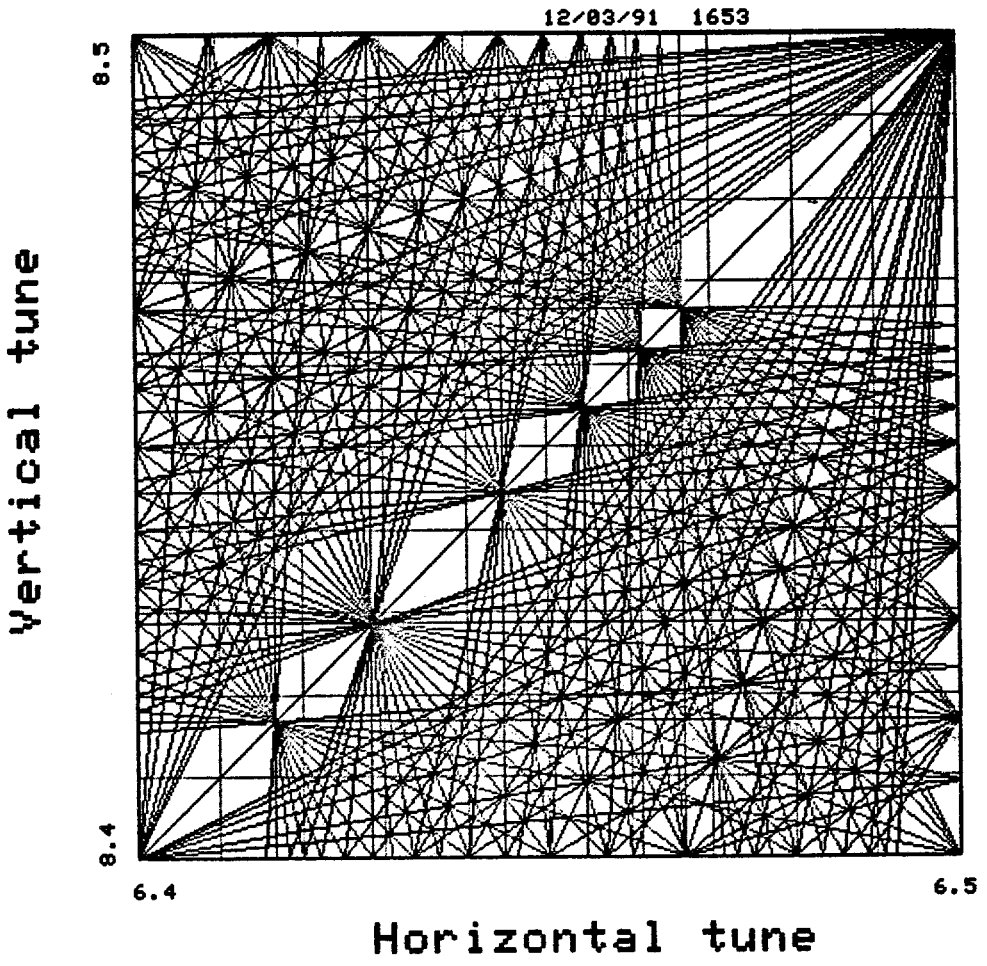
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:50



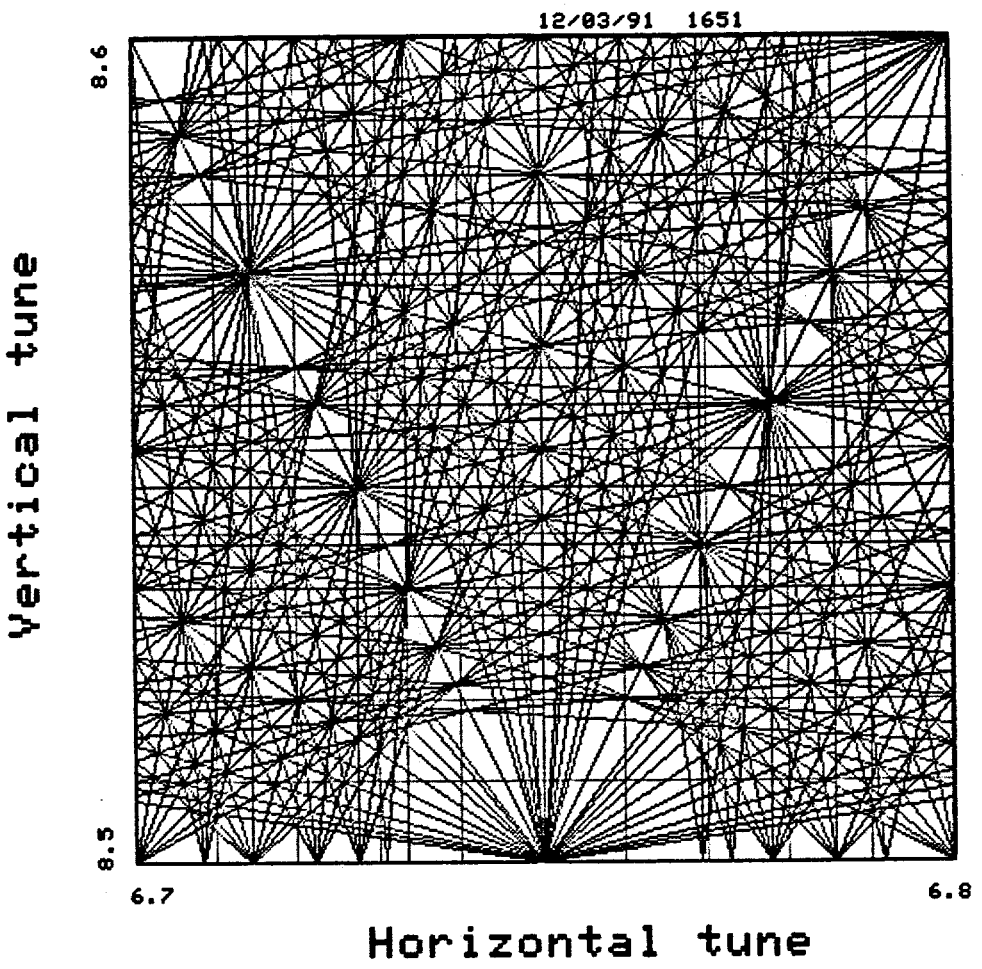
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:53



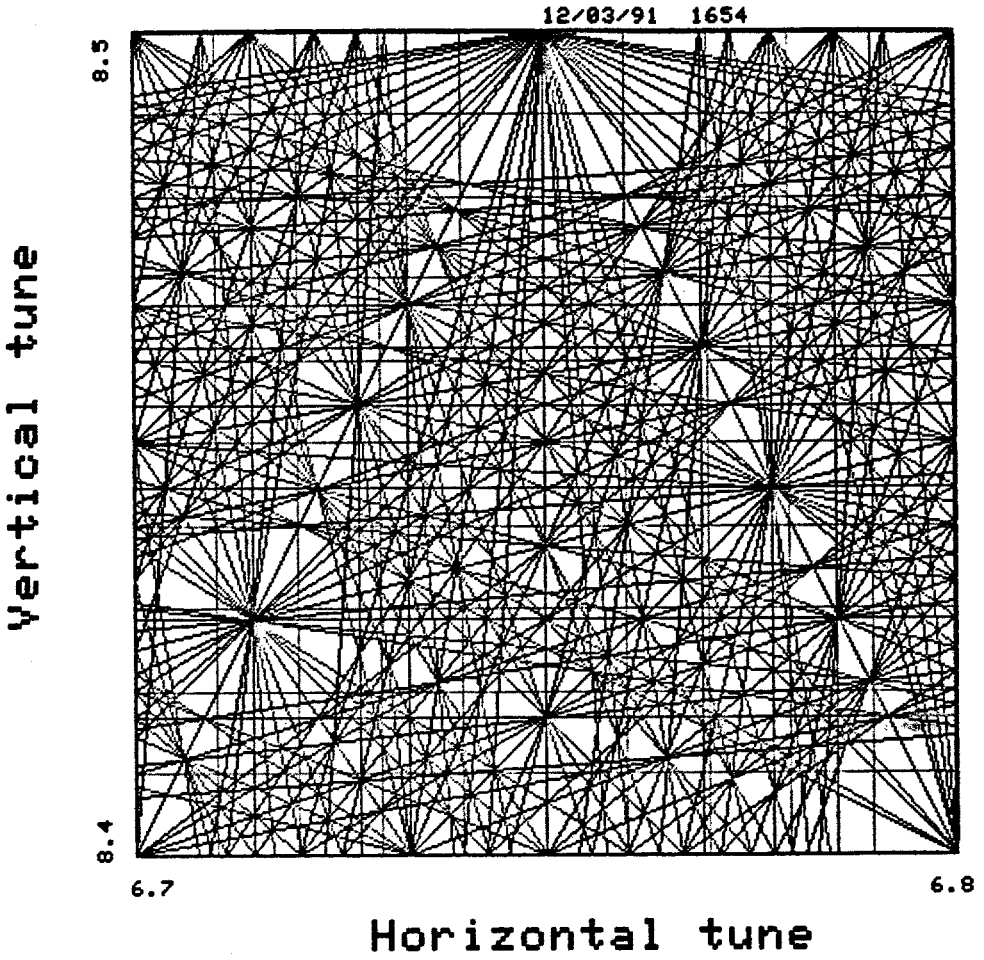
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:51



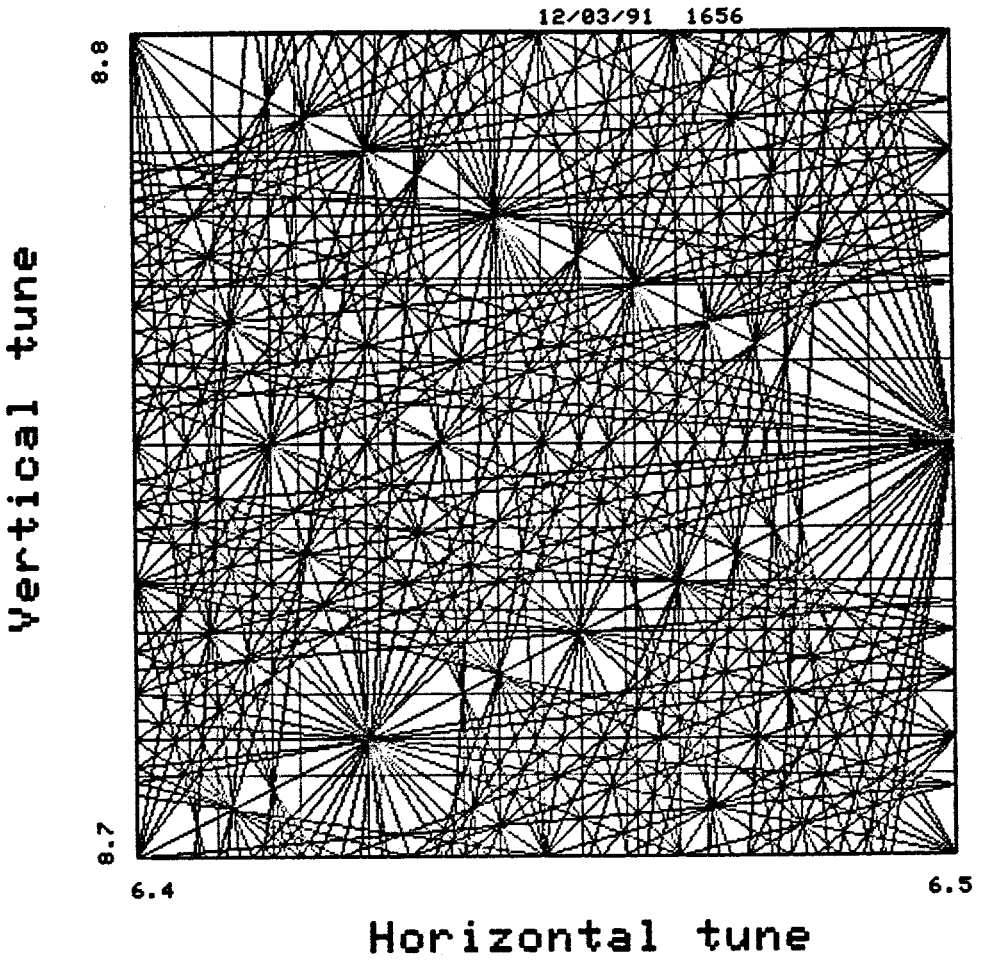
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:55



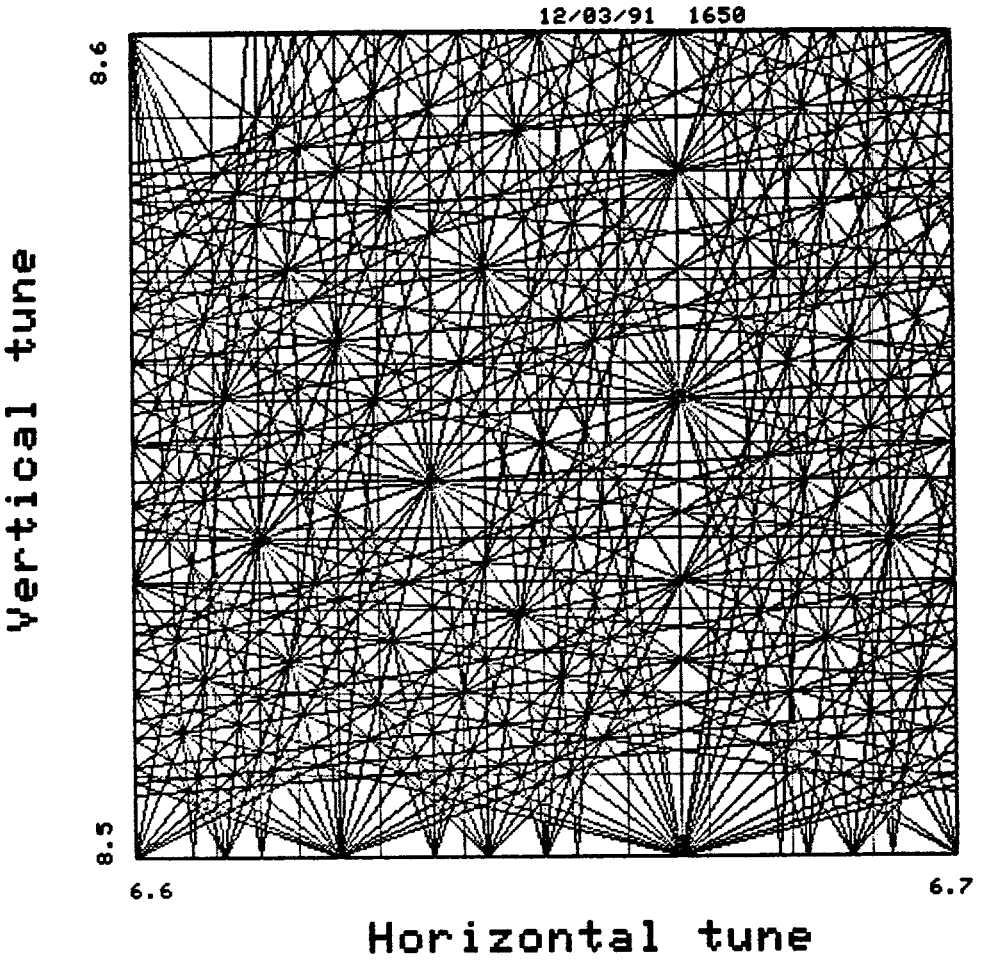
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:56



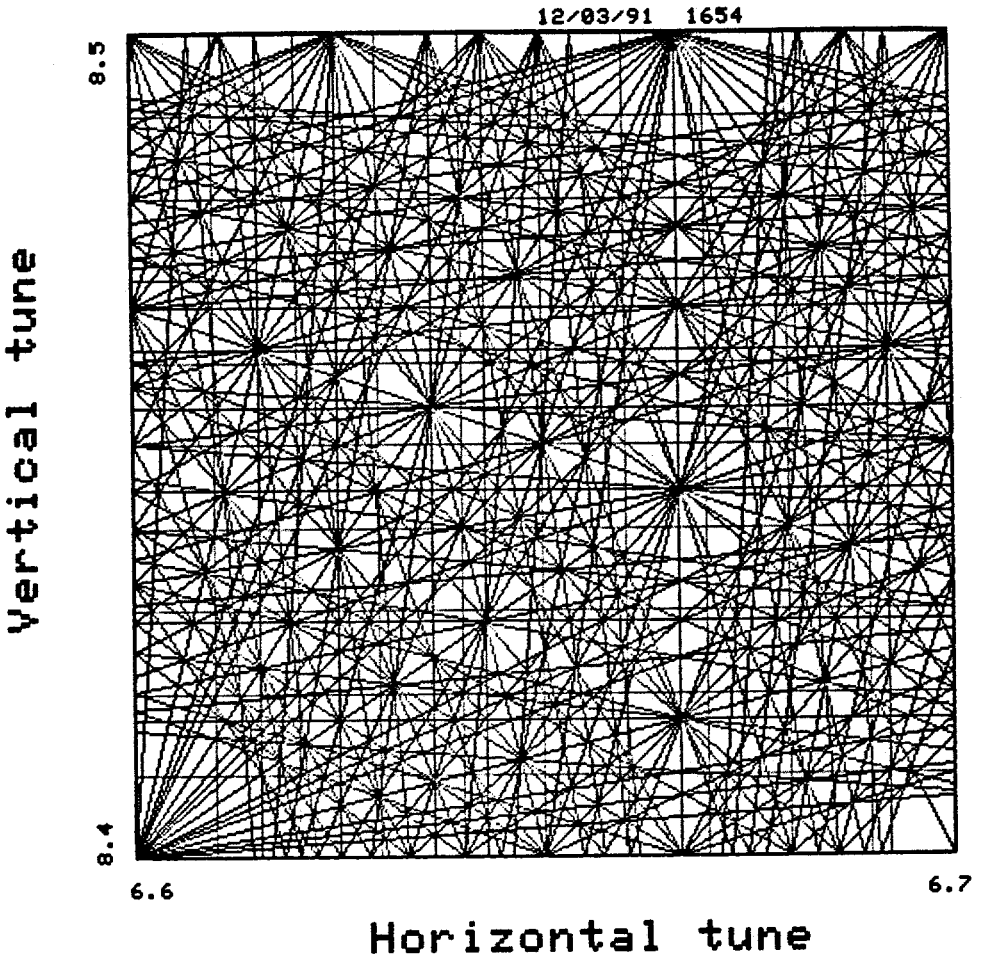
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:51



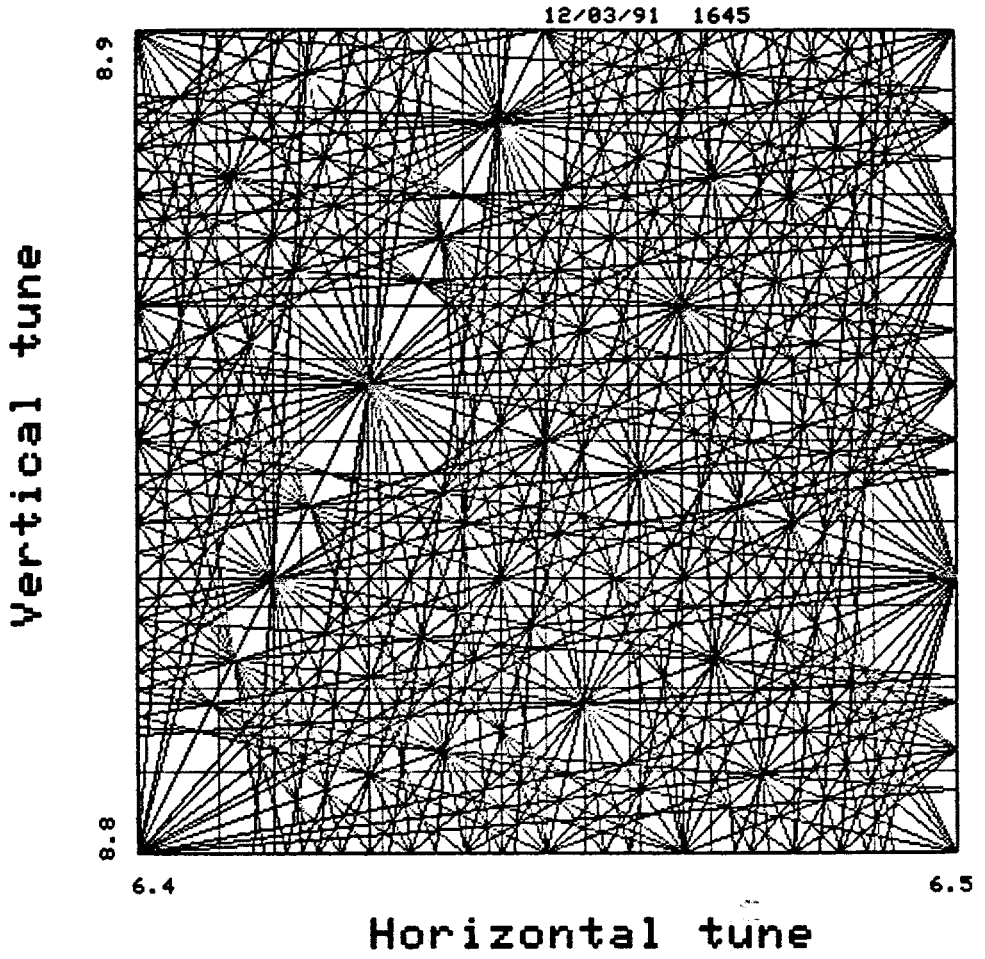
Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:54



Resonances from order 1 to 15

CONSOLE LOCATION 15, AP10 3-DEC-1991 16:45



Resonances from order 1 to 15