Determining the 90º Pulse Width

You may work in groups of 3 on the lab. Put all your names on the lab report.

On the EFT-60, put in the neat ethylbenzene sample and setup for H-1. Change **rg** to 30. Tune the instrument if it is needed. Obtain the spectrum as usual, but process the data in NUTS using **a2** and phase it, <**ap**>. Do it with the default **pw** (17.5 μs) at first. Use <**dc**> in NUTS to adjust the spectrum to the middle of the screen so you can see negative peaks (by adjusting the left scroll bar) and set the vertical scale so that this spectrum is about 80-90% of full scale (by adjusting the right scroll bar). After this adjustment hit the enter key to return to the main menu, then fix the scale with <**FS**> command. Plot the spectrum <**pl**>.

Now change the pw in PNMR to three times the default value, i.e. **pw** = 52.5 μs. Process with the <a2> command. Do **not** phase, do **not** use the FS command. Do **not** change the scale. Plot it. It should be about the maximum negative spectrum.

Now do about 7-10 other pw's (such as 5, 10, 20, 30, 40, 50, 60, 70) to get a relatively smooth curve when height of any peak is plotted *vs*. pw. You may do more than these values.

Your report should include your conclusion as to the correct 90º pulse width. As well as an explanation as to how you determined it.

The 90º pulse width for an instrument is 7 microseconds. Where will the magnetic vector of the nucleus (initially on the *z*-axis) end up immediately after *x*-axis pulses of the following times? In each case the pulse will be done after the system has come to equilibrium on the *z*-axis.

a) 7 microseconds
b) 14 microseconds
c) 28 microseconds.
d) If the detector (located in the *xy*-plane) is turned on which of the above pulses will give the maximum signal.