

## T1 measurement

T1 measurement is very important if you are going to run 2D NMR.

T1 is called spin-lattice relaxation time. Here lattice means the *environment* of the magnet, the proton.

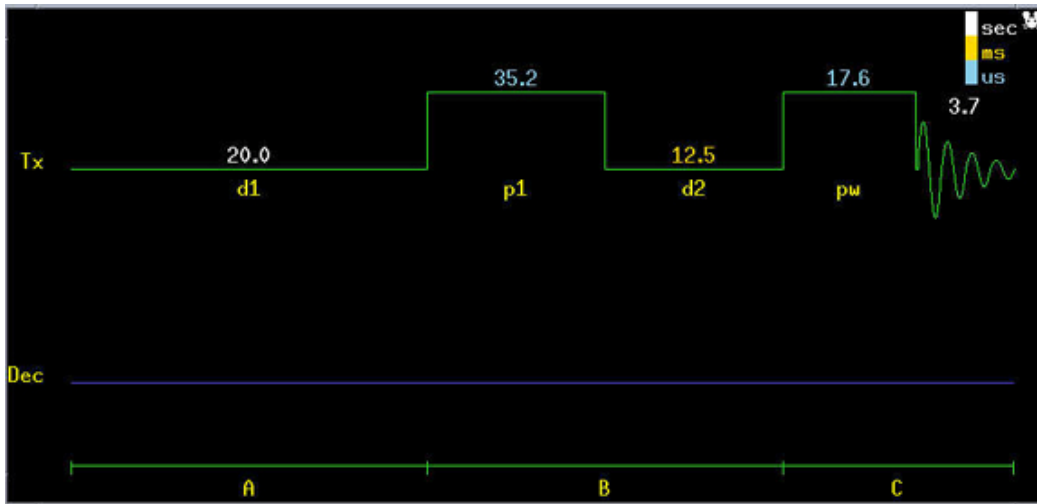
**dot1** ↵ ; this command sets up the t1 experiment, which prompts for the following:

enter minimum t1 expected (sec): 0.1 ↵ (0.1 to 1 second is a good starting point)

enter maximum t1 expected (sec): 4 ↵ (5 to 10 sec are typical)

enter number of transients (nt): 1 ↵ (use minimum nt). Sometimes it does not popup, so you need to type in.

By typing **dps**, you will see the sequence.



The d2 array detail is listed below this window.

ACQUISITION ARRAYS	
array	d2
arraydim	12
i	d2
1	0.0125
2	0.025
3	0.05
4	0.1
5	0.2
6	0.4
7	0.8
8	1.6
9	3.2
10	6.4
11	12.8
12	25.6
EXPERIMENT SET UP USING 12 TAU VALUES	
APPROXIMATE ACQUISITION TIME 0.75 HOURS	

Dot1 also sets up the **pw** and **p1** as are shown in the pulse sequence. You can type **dg** to double check all the parameters.

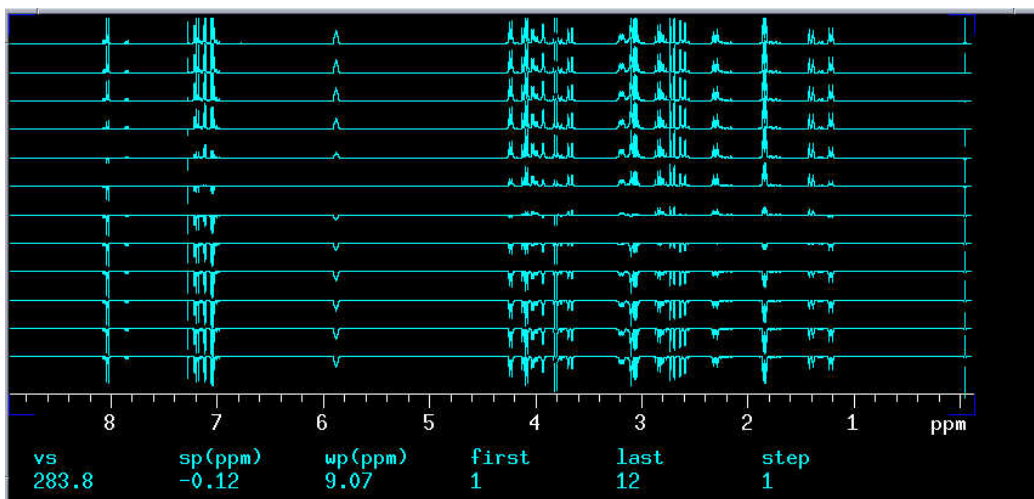
ACQUISITION	SAMPLE	PROCESSING	FLAGS
sfrq 399.729	date May 14 2004	lb not used	il y
tn H1	solvent D20	sb not used	in n
at 3.744	file exp	gf not used	dp y
np 27160	DECOUPLING	awc not used	hs nn
sw 3627.3	dn H1	lsfid not used	SPECIAL
fb 2000	dof 0	phfid not used	temp not used
bs 4	dm nnn	wtfile	
ss 0	clmm c	proc ft	
tpwr 60	clmf 11148	fn not used	
pw 17.6	dpwr 42	math f	
p1 35.2			
d1 20.000		werr	
d2 arrayed		wexp	
tof -1278.2		wbs	
nt 8		wnt	
ct 1			

In the text,  $pw = pw90$ ;  $p1 = 2 * pw90$   
 $d1 = 4 * t1(max)$  ( $t1(max)$  is the maximum  $t1$  expected entered above)

Now you see that **nt** is 8.. Please change it to **1** to save your time.

**ga** ↵

When the experiment is done, type **dssa** ↵



**dscale, vp=10**

**ds(12)** ( please use the last spectrum),

**aph**

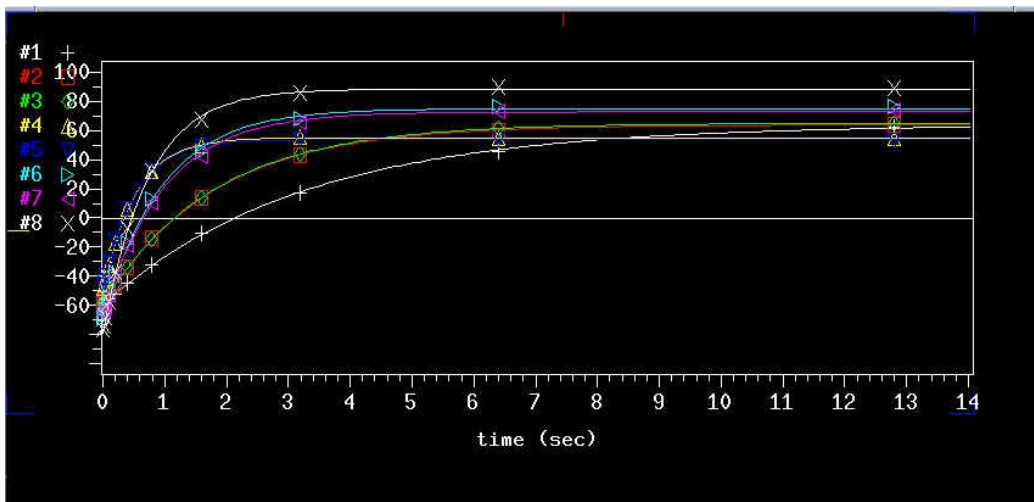
click *ph* and adjust the level using the mouse. Peaks above the *ph* line will be selected.

**dll** or **dpf**

**t1s** ( you will get the T1 for each peak).

( If you type **t1** rather than **t1s**, you get all the information at all 12 steps of the array of d2).

**expl** ↵ will give you the following exponential curves. T1 is the constant of the curve.



Note:

Please do not type **wft**, which will show you the first spectrum and all the peaks were down. But you can type **wft(12)** to show the last spectrum.

