

Water suppression

You might be working on protein NMR or your sample has 90% of water (H₂O). You want to suppress the water peak. The way you do is to create a shaped pulse.

To do this, you need to follow the directions:

Insert your sample, **lock** and **shim** as you used to do for a simple ¹H spectrum.

nt=1

tpwr=57(or some other data but should be no larger than 63 dB on a 400 MHz machine.)

dps to take a look at the pulse sequence

dg to view the parameters. **gain?**, **gain=10** or lower the gain if ACD overflows.

ga aph dscale expand the water signal. Place the cursor at the water peak, **nl**

movetof ga

Place cursor on the water peak and place the right cursor on the far right(10% away from the farthest signal. **sw=(delta*2)*400** (delta is listed on the lower side of the window)

movesw ga

array pw (to see how to array, go to *calibrating pw90*)

pw=pw90

Place two cursors on both sides of the water peak

Click **Pbox, 90, e-Burp1, close,**

click **name**

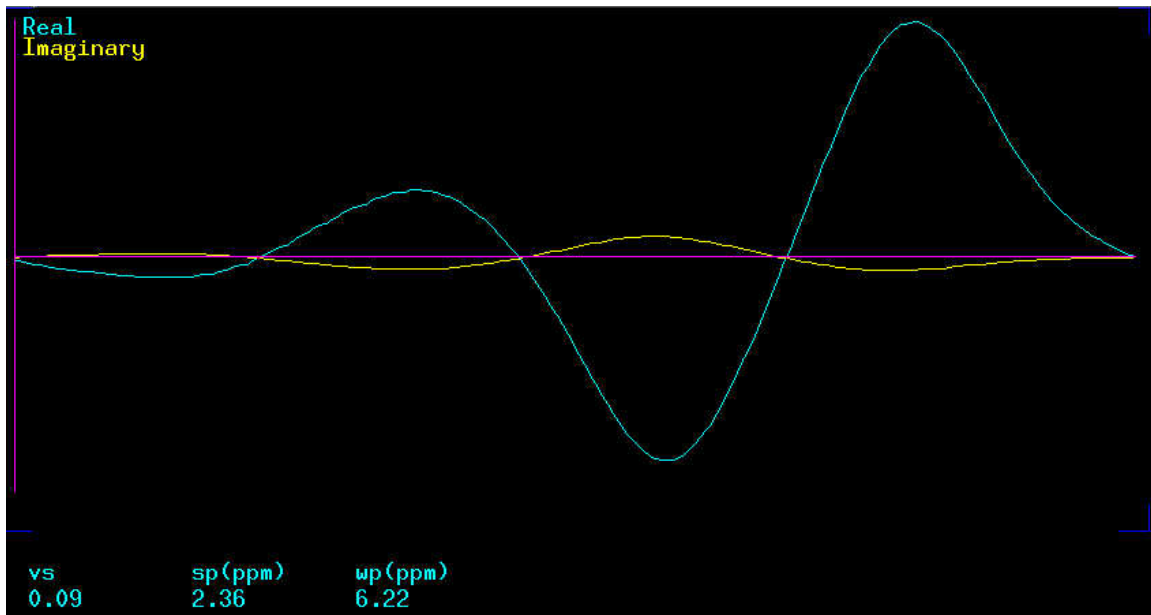
Write **cungen_wet**

close

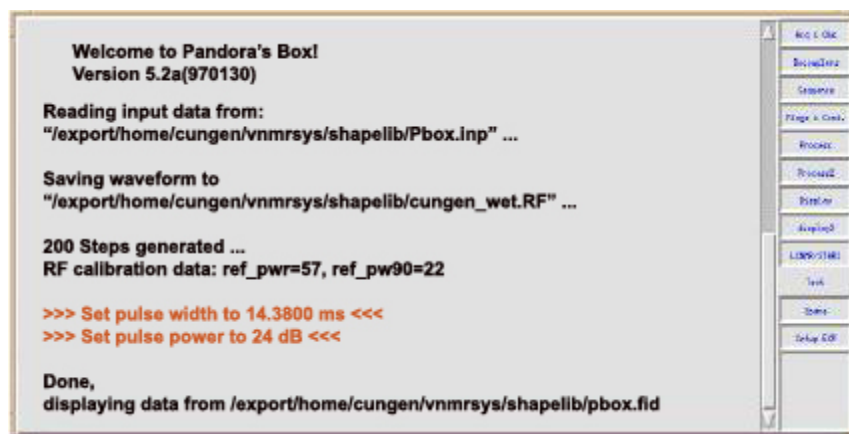
Enter reference 90 pw: **22** in this example (you need your own number by calibrating pw)

Enter reference power level: **57**.

Your shaped pulse will now be displayed in the Graphics Window.



The corresponding pulse width and pulse power will be displayed in the Text Window.



Please take a pen with you and write down pulse width, which is **14.380 ms**; and the pulse power which is **24 dB**.

Type **wet1d**,

Type **dps** to view the wet pulse;

Type **dg** to view the parameters.

wetshape='cungen_wet'

pwwet=14380

wetpwr=24

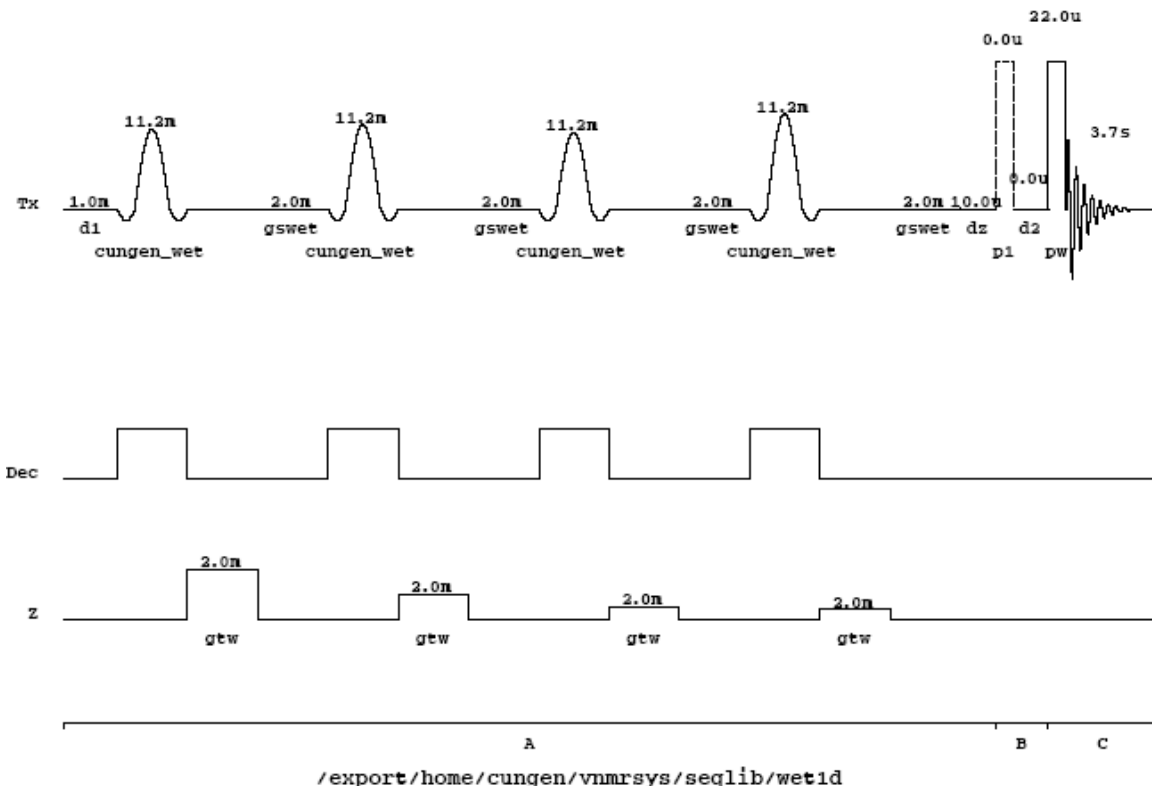
dps

dg

Now you see **gzlvlw** is the maximum of the probe. Please change it to **20000** by typing **gzlvlw=20000**

dg

dps and you will see the wet1d pulse sequence as follows:



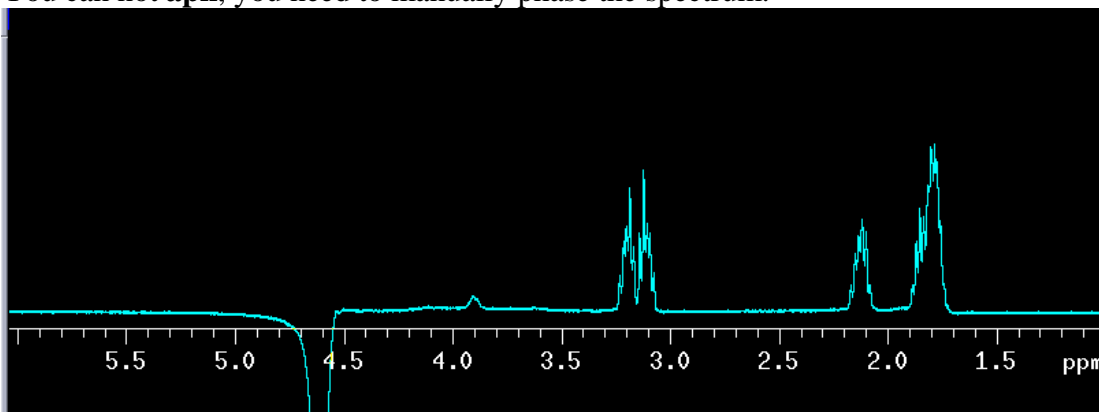
Now it is ready to go for NMR.

But you may check **nt=32**, and set up the proper gain.

ga

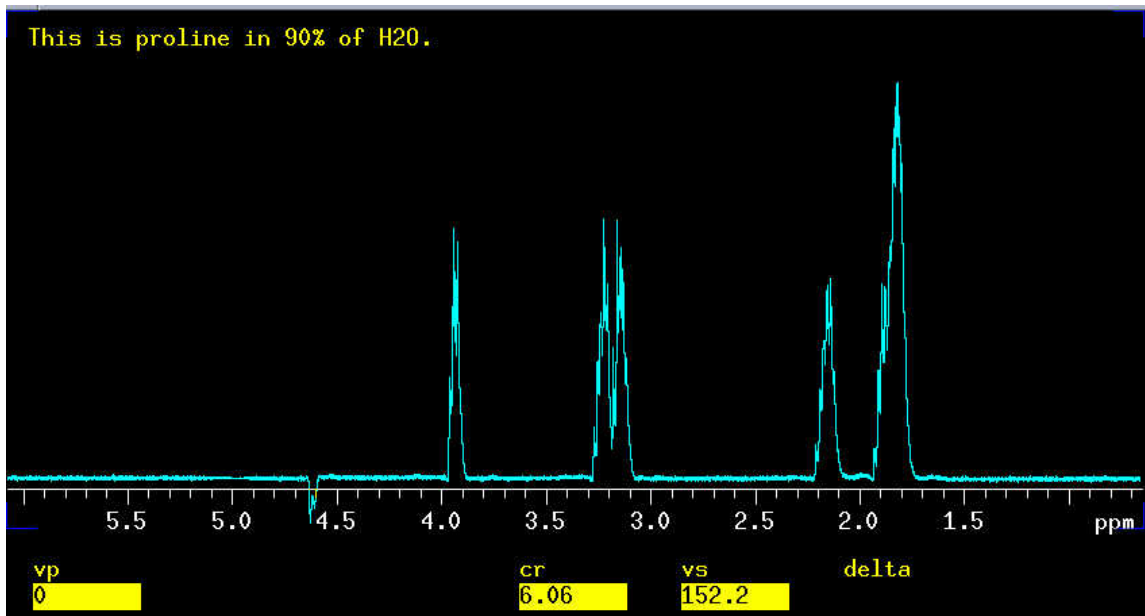
You should get a spectrum like this (proline in 90% H₂O)

You can not **aph**, you need to manually phase the spectrum.



From the spectrum, you can see that the signal close to the water peak is also suppressed. You can optimize it by placing the cursors a little away from the peak. And create another spectrum.

An ideal water-suppressed spectrum could be like this.



ssfilter='n' indicates that digital water suppression is not used. You can set it to 50 or up to 100 and type **wft** to view your spectrum.

Need help, let me know. Cungen Zhang