

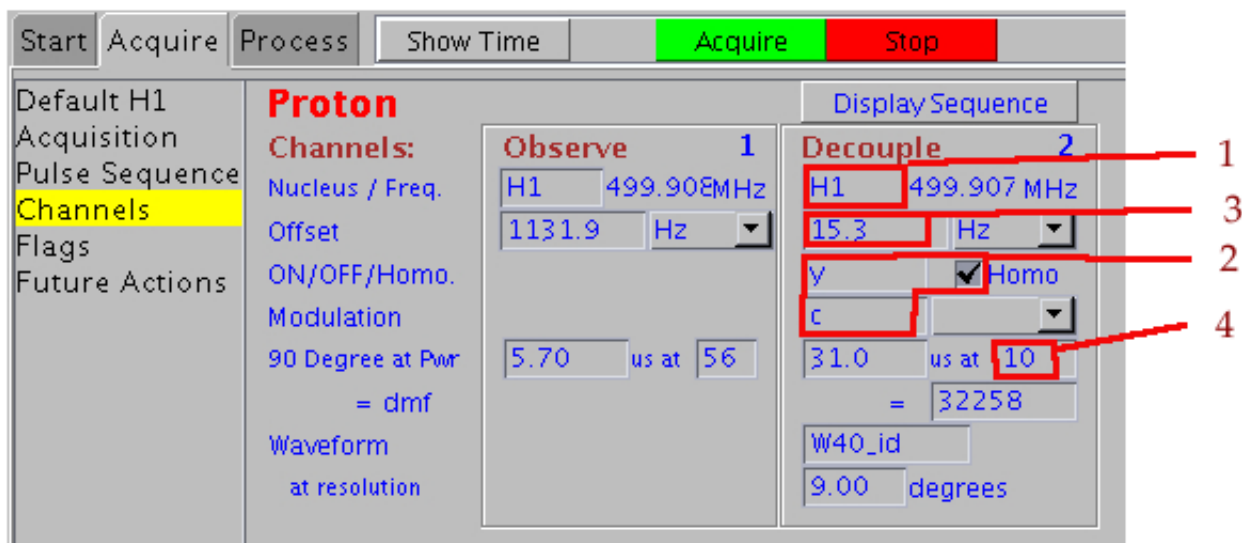
Homonuclear Decoupling with vnmrj.

Updated 05/09/08

The procedure for homonuclear decoupling on Varian's new 400-MR consoles is slightly different than that previously used on Inova and Mercury consoles.

Mercury and Inova Consoles:

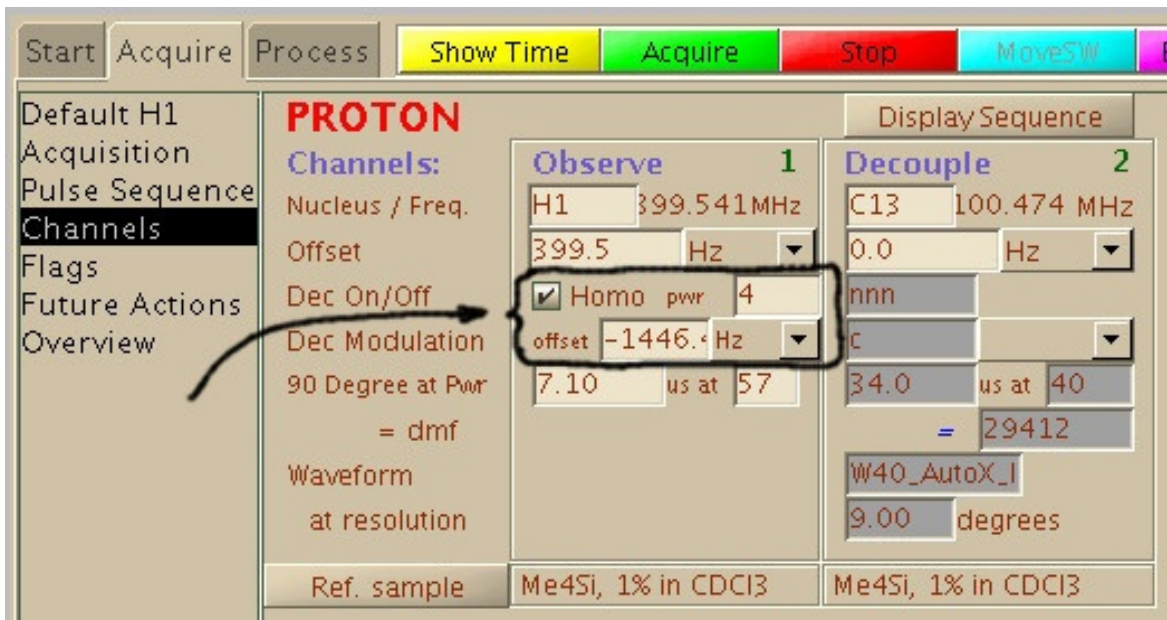
Load Proton acquisition parameters and take a proton spectrum. Open the *Acquire, Channels* panel and change the nucleus to decouple to H1 (step 1 in the Figure below). Change the parameters indicated in step 2 to those shown in the figure. Expand the multiplet you want to decouple and position the cursor in its center. Type `sd` in the command line to set the decoupler frequency to that indicated by the cursor; the value will show in the window (3). Enter a power for decoupling (4). A typical value to start is 10. You will need higher power for broad multiplets and lower power for fine doublets. If your multiplet is close to other signals you will have to use lower powers to achieve acceptable selectivity. The power is doubled every 6 units. Never use powers higher than 30 or you may destroy the probe! Start your acquisition as usual.



If you need multiple decouplings, you can follow the same guidelines as above but with the following changes. After taking the regular proton spectrum go to the *Acquire, Acquisition* panel and disable the "Receiver Gain Auto" check box. Now, let's suppose you want to decouple 3 multiplets. The decoupler frequency will then be an array of 3 frequencies instead of a single number. To find the frequencies, put the cursor on top of each multiplet and type "`sd dof?`". Then type all the values found, separated by commas in a command like this: "`dof=1000, 1100, 1200`". Start your acquisition as usual but remember to indicate the number of transients that each spectrum will have, for example `nt=16`. When finished, you will have the 3 fids in the same data set and you can toggle their displays with the `>` and `<` icons on the vertical toolbar. Keep in mind that if you need to establish several connectivities in your molecule, it will probably be easier and faster to run a gCOSY; it will take only about 5 minutes.

400-MR Consoles:

Homonuclear decoupling on our two 400-MR spectrometers (named Cobalt and Gallium) is slightly different. After acquiring a routine Proton spectrum, go to the *Acquire, Channels* panel shown in the figure below and enable homonuclear decoupling by clicking on the check box “Homo”. Leave the decoupler channel as 'C13'; this channel is used for heteronuclear decoupling. The decoupler frequency can be selected from the spectrum display by expanding the region of interest, placing the cursor on the middle of the multiplet to decouple and typing `shd`. The decoupling power can be entered in the box labeled “pwr” right beside the HOMO check box or typed in the command line, for example `hdpwr=4`. The power should be between -10 and +10; with 2 a good starting value. You can now start your acquisition as usual.



To decouple several multiplets, create an array of frequencies as described above. The parameter to array in this case is `hdof`.