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NMR Facilities  
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## The DEPTQ EXPERIMENT

DEPTQ is similar to the DEPT experiment but it also allow us to detect non protonated carbons. Below, the different carbon signals observed on a DEPTQ and on a DEPT are detailed. Blue and red indicate signal phase up or down respectively.

DEPTQ 45°  
C, CH, CH<sub>2</sub>, CH<sub>3</sub>

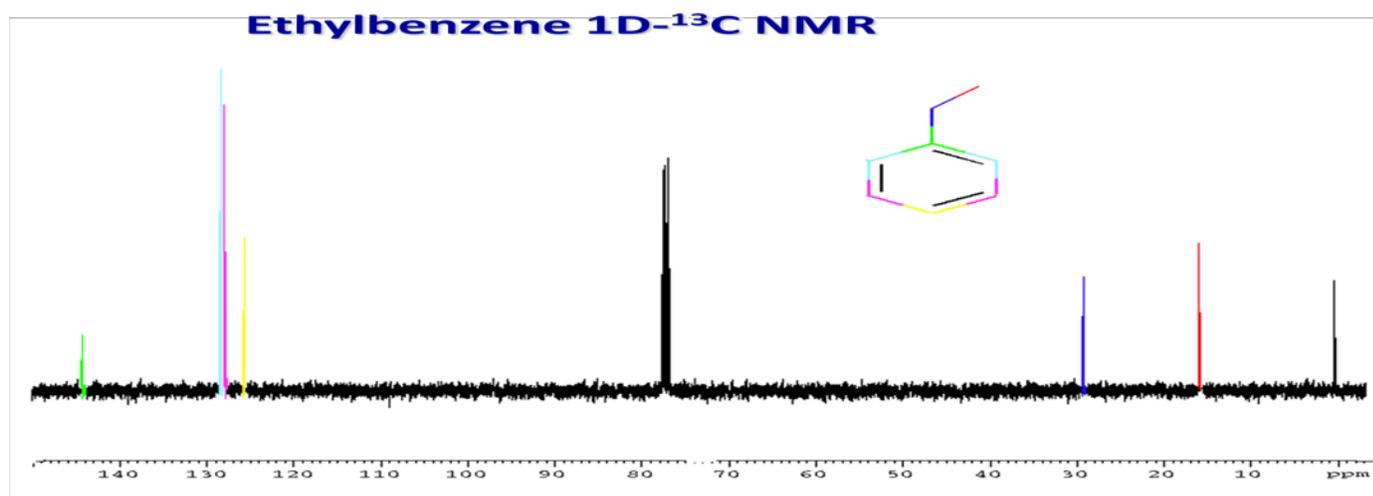
DEPT 45°  
CH, CH<sub>2</sub>, CH<sub>3</sub>

DEPTQ 90°  
C, CH

DEPT 90°  
CH

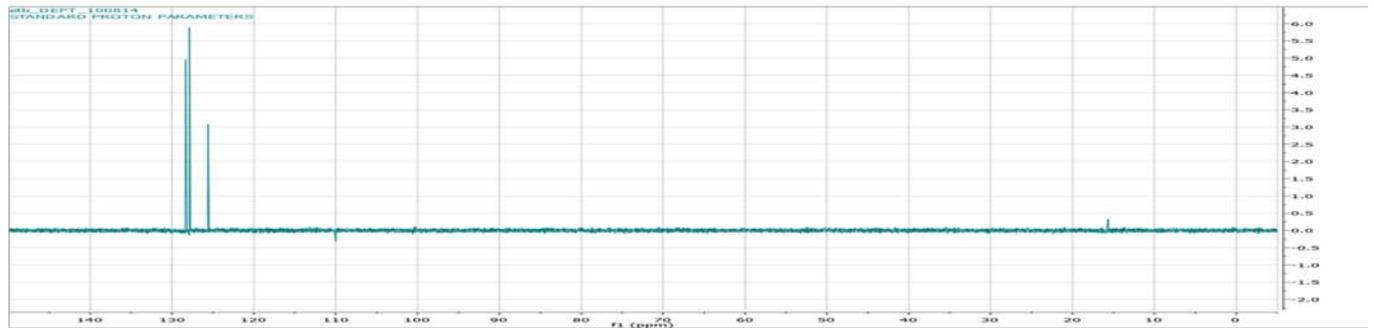
DEPTQ 135°  
C, CH, CH<sub>2</sub>, CH<sub>3</sub>

DEPT 135°  
CH, CH<sub>2</sub>, CH<sub>3</sub>

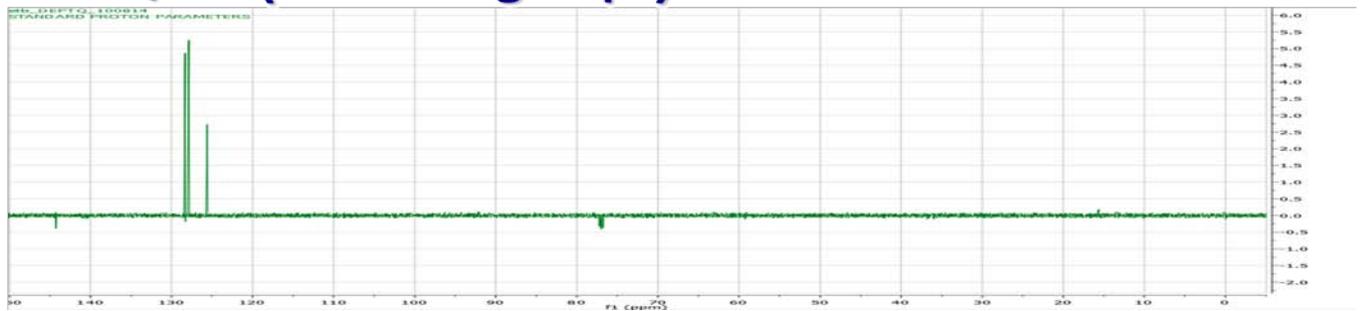


Examples:

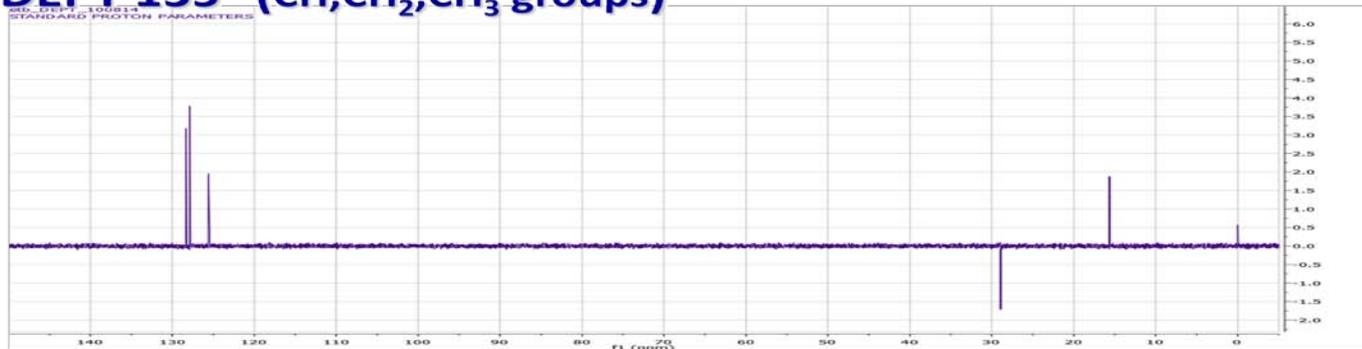
### DEPT 90° (CH groups)



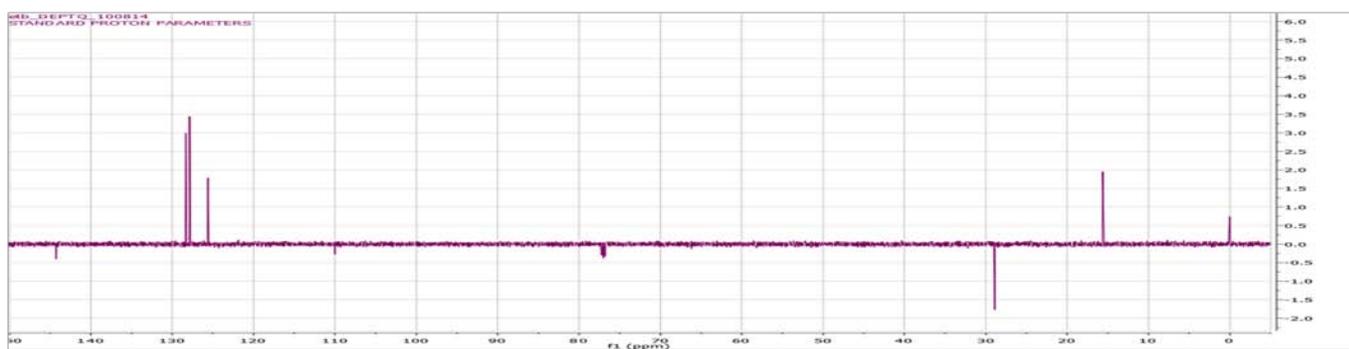
### DEPTQ 90° (CH and C groups)



### DEPT 135° (CH, CH<sub>2</sub>, CH<sub>3</sub> groups)



### DEPTQ 135° (C, CH, CH<sub>2</sub>, CH<sub>3</sub> groups)



# Setting up the DEPTQ experiment.

DEPTQ is available on the Varian 500 and Varian 600 spectrometers.

1.- Call the “HYDROGEN” experiment and then call the “CARBON” experiment. Both experiments in the same experiment page. (This is necessary for both DEPT and APT due to a bug in VNMRJ.)

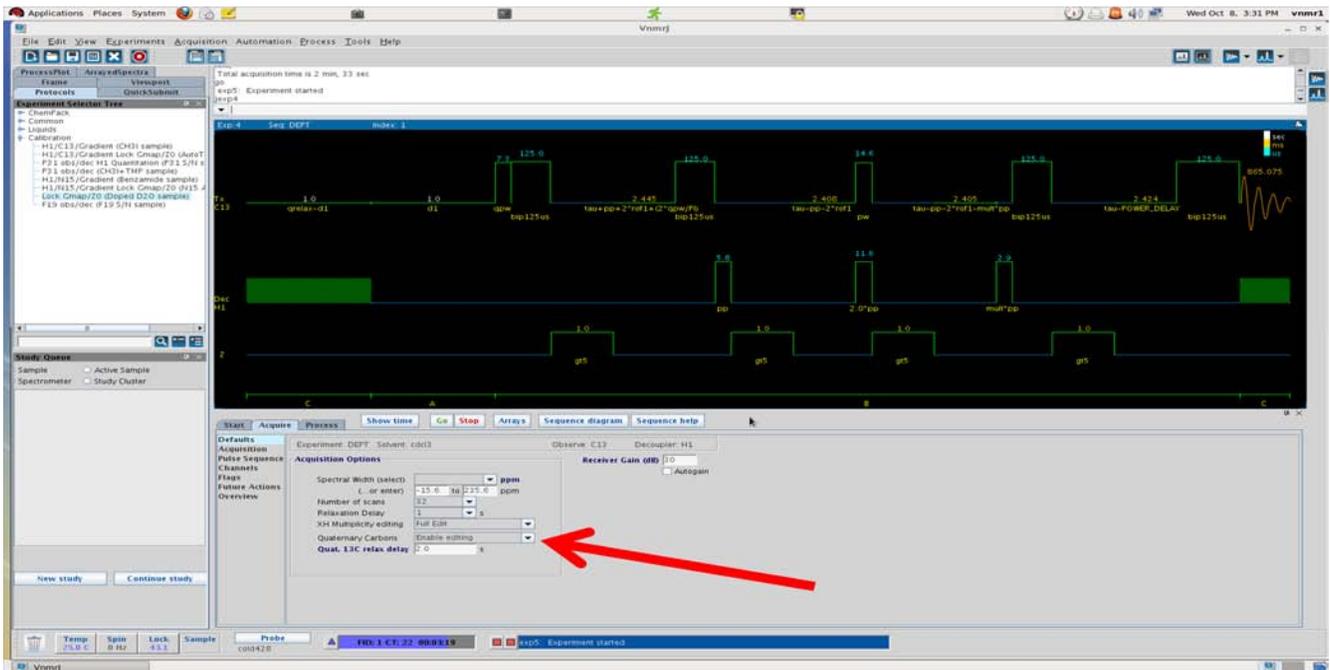
2.- Call the DEPT experiment.

If DEPT or APT are called directly (skipping step 1), an alert sign appears at the bottom of the VNMRJ window. This indicates that the experiment was not set up properly (see the figure below).



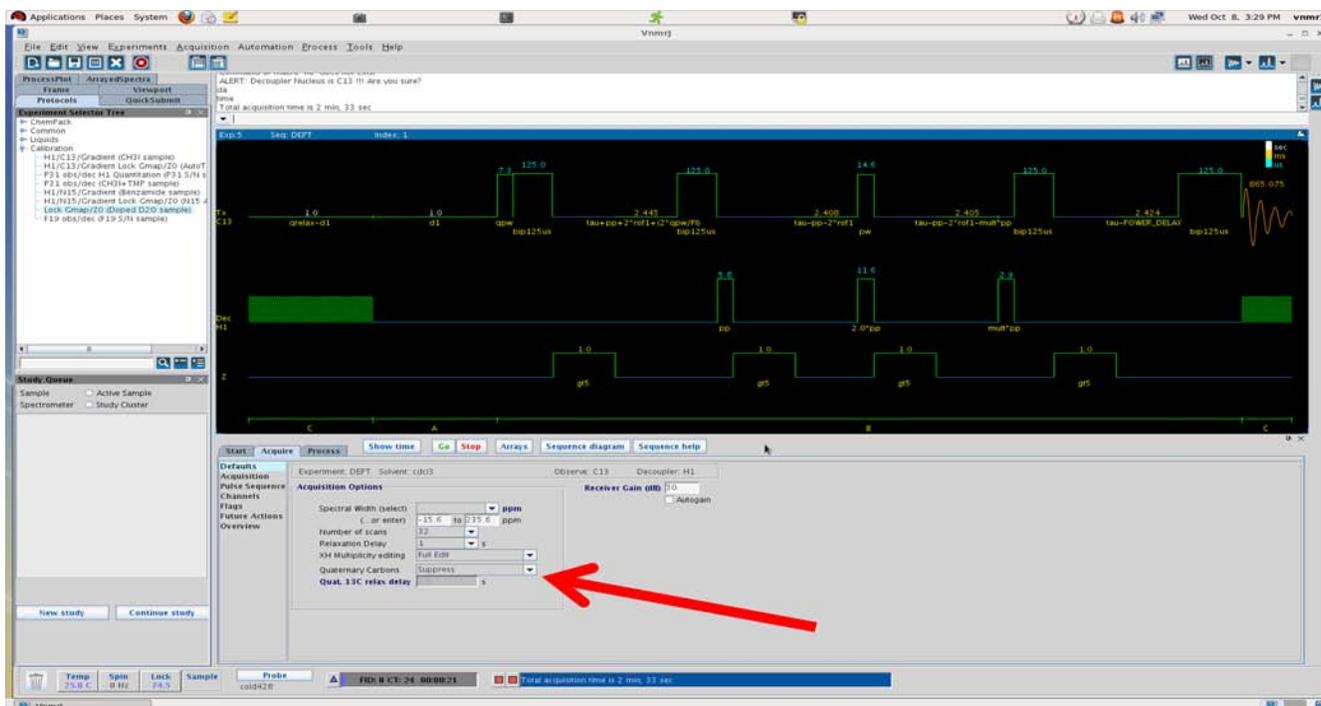
Also, the pulse sequence shows that the experiment will detect H1 and that the decoupler channel is set to  $^{13}\text{C}$ . This is wrong!

When the “CARBON” sequence is loaded before the DEPT, there is no alert sign and, the DEPT pulse sequence detects  $^{13}\text{C}$  and it decouples  $^1\text{H}$ , as shown in the figure below.



## DEPTQ and DEPT options

The default DEPT is now the DEPTQ. To set up the old DEPT, on the “Quaternary Carbons” line, select the option “Suppress”, as shown in the next figure (red arrow).

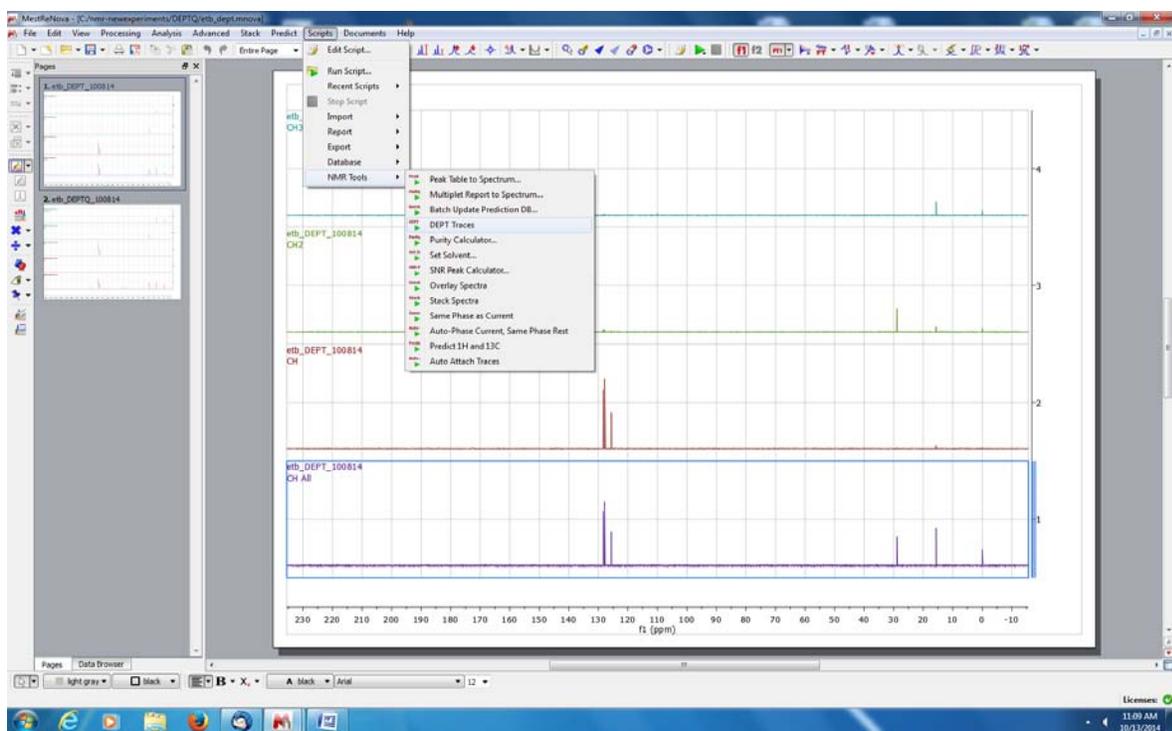


To run only a 90° spectrum, on the “XH multiplicity” line select the “XH only” option. For a 135° spectrum select the “XH/XH3 up & XH2 down” option.

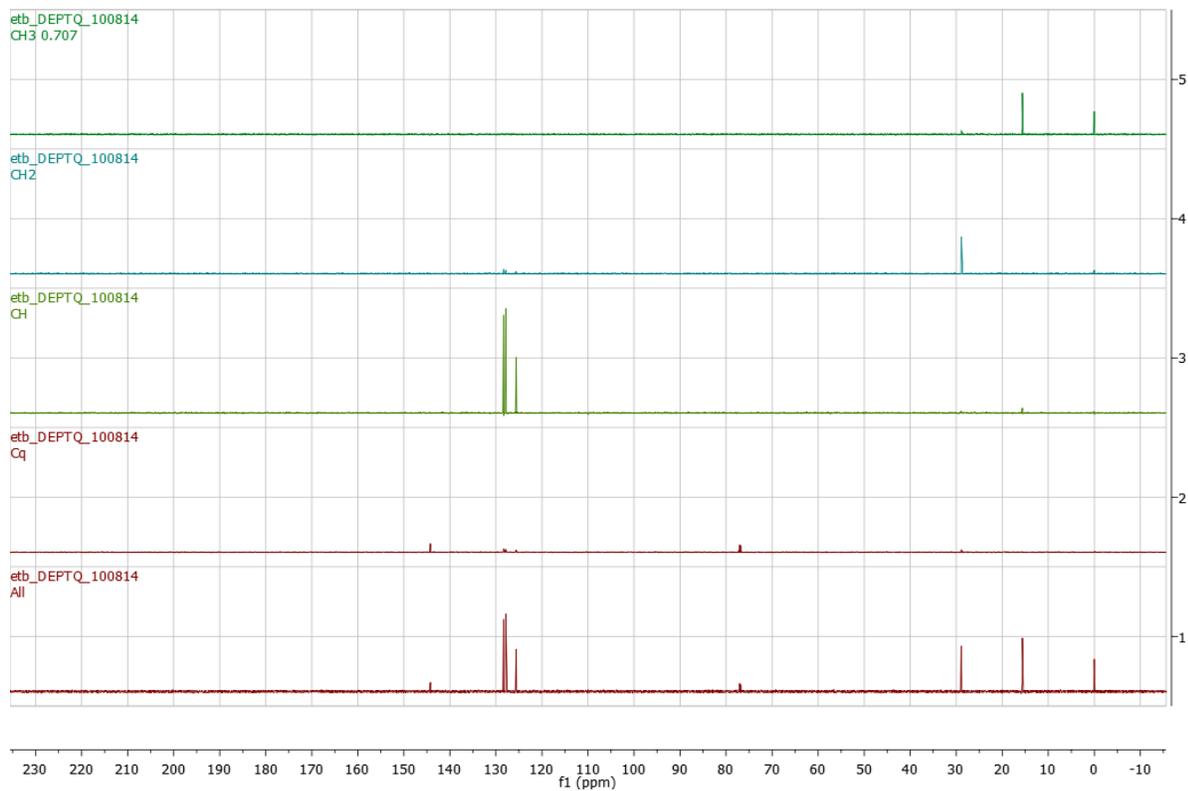
## Full editing of carbon spectra:

The DEPTQ generates 8 spectra while the DEPT generates 4 spectra. These spectra can be processed with MestreNova to yield “full carbon edited spectra”, as detailed below,

- 1.- Open the DEPTQ or DEPT spectra on MestreNova
- 2.- Run the script “DEPT Traces” from the menu Scripts → NMR Tools → DEPT Traces.



**DEPTQ: full carbon edited spectra (CH<sub>3</sub>, CH<sub>2</sub>, CH and C).**



# DEPT: full carbon edited spectra (CH<sub>3</sub>, CH<sub>2</sub> and CH)

