Proton Spectrum with Heteronuclear Decoupling $^{1}H\{^{13}C\}$

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The nuclei being radio frequency (RF) irradiated are of a different isotope than the nuclei being observed. The splitting reduces the sensitivity of signals that are already weak, and the large splitting causes an overlap of lines which results in complex spectra.

1. Create new experiment.
2. Inject the sample.
3. Set the following acquisition parameters:

   PL1 : F1 channel – High power level for 13C transmitter pulse
   P0 : F1 channel – 45° ^{13}C transmitter pulse
   PL14 : F2 channel – Power level for CW/HD decoupling
   D1 : 2 s – relaxation delay
   D11 : 30 ms – delay for disk I/O
   TD : 4 K
   SW : 500 Hz
   O1 : On resonance of ^{13}C signal
   O2 : 50 Hz offset from ^{1}H signal
   NS : 1
   RG : Receiver gain for correct ADC input

4. Lock signal on appropriate solvent.
5. Shim.
6. Set up the spectrometer.
7. Acquire data.
8. Process the data.
9. Set the following processing parameters:

   SI : 4 K or more; use zero-filling to ensure enough data points to obtain accurate values for the residual splittings
   BC_mod : “quad”
   WDW : “EM”
   LB : 2 Hz
   FT: Fourier Transform
   Phase correction : adjust the phase to pure absorption

Baseline correction : ABS
Referencing : set the TMS signal to 0 ppm

10. Reset the parameters once finished.
11. Eject the sample and replace it with the standard.
12. Lock signal on specified solvent.