**Instructions for generating and setting random decoupling**

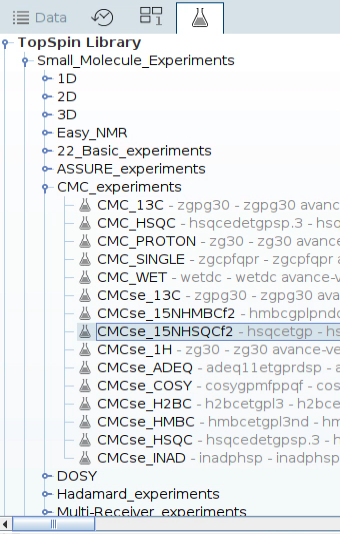
This random CPD program is working on only Topspin version 4.1.1 and above.

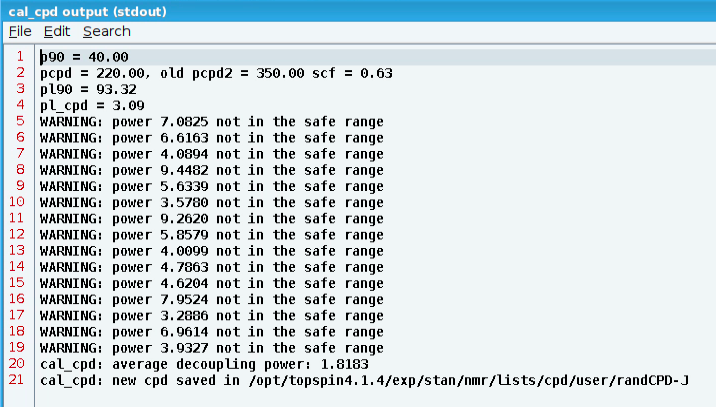
<Preparing step>

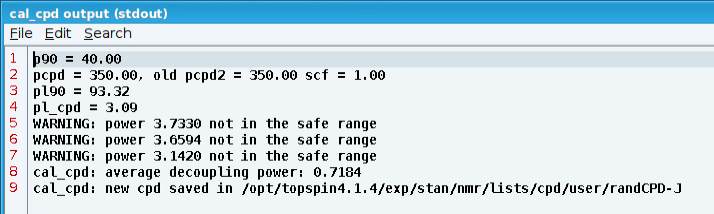
1. Save au-program “cal\_cpd” in ~/topspin 4.x.x/exp/stan/nmr/au/user
2. Save the original random decoupling CPD file “90x180y90x\_rand\_200\_800\_100ms” in ~/topspin 4.x.x/exp/stan/nmr/lists/cpd/user

<generating CPD file for the random decoupling on 15N channel>

1. Open the default HSQC experiment from Topspin Library by clicking the icon   
   double click the “CMCse\_15NHSQCf2”



1. Type “getprosol”
2. Put the original CPD file “90x180y90x\_rand\_200\_800\_100ms” into CPDPRG2 and choose the proper τ90(15N) in PCPD2, such as 220 us for our system (you can start with the value from the getprosol on your system)
3. Type “cal\_cpd cpdprg2”.   
   It will generate a new random decoupling CPD file named “randCPD-J” based on the τ90(15N) =220 us and with a proper power level based on your system.
4. In the cal\_cpd output file, you can check the average decoupling power. If the power level for any cycle in this decoupling is larger than the suggested value from getprosol, it will show the WARNING message like the one below.   
   
5. You can adjust the PCPD2 value to adjust the average power level and remember the final value of PCPD2 (e.g. τ90(15N)=350 us)



Note that you can use the random decoupling CPD file for running the experiment, even if the CPD file shows a WARNING about the power level. This WARNING is just an indication.

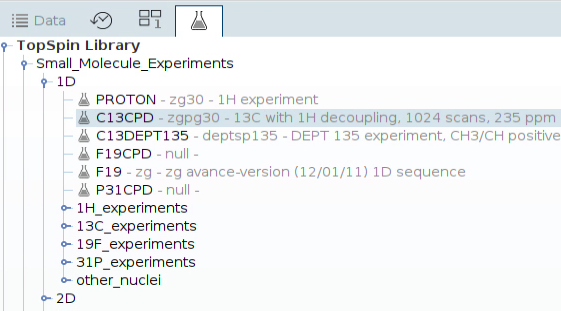
<setting the random decoupling>

1. Open the dataset where you want to use the random decoupling.   
   For the SMT experiment, pp name would be “seq\_cest\_cw\_NEW\_Variable2”
2. Put the random decoupling CPD file (randCPD-J), generated in the previous step, in the proper CPDPRG#. For the SMT experiment, it would be CPDPRG7.
3. Put the τ90(15N) value used in step 6 in the PCPD#. For SMT experiment, it would be PCPD7=350 us.
4. The power levels are explicitly indicated inside the CPD file, so we don’t need to set up the power for this decoupling. So, change the related power to 0. For the SMT experiment, PLW27 set as 0.
5. Run the experiment.

<random decoupling on 1H or 13C channel>

You can repeat the step 1-10 but

For 1H, use “C13CPD” experiment from Topspin Library



For 13C, use “CMCse\_HSQC” from Topspin Library