

¹H Observe with ¹¹B Decoupling on the Inova 500 w/ the NTR Probe.

This guide is written assuming proficiency in basic operation of the Varian NMR instrument. You should be experienced in performing basic 1-dimensional NMR experiments before attempting to perform more advanced experiments on your own. Please ask for help the first time you perform this, to minimize your frustration (if for no other reason).

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Considerations: The NTR Probe is simultaneously tuned for ¹³C, ¹H, and another broadband nucleus. This manual assumes that the third channel is tuned to ¹¹B. The Boron channel is connected to Channel-3 on the spectrometer. In this mode you can NOT observe ¹¹B directly; however, ¹H observe while decoupling ¹¹B is possible.

The ¹¹B decoupler delivers significant power to the probe, so the pulse-sequence limits the decoupler power used, as well as the total acquisition time. The acquisition time must be set to less than 0.25 seconds. This limits the frequency resolution in the ¹H spectrum; however, the results are generally adequate. The resolution can be improved by narrowing the spectral width before acquiring the spectrum.

- 1) Setup for a normal proton spectrum ([Setup] [Nucleus,Solvent] ...etc.).
- 2) Take a normal spectrum, and zoom-in on the region containing peaks (use the red cursors, and the “[Expand]” button. Don’t use the “window” command.
- 3) Type **movesw** <Ret>, then take another quick spectrum to make sure the window is correct.
- 4) Type **hbdec** <Ret> to setup the ¹¹B decoupling parameters.
- 5) Set the number of transients (nt= #).
- 6) Type **ga** <Ret> to acquire the ¹¹B decoupled spectrum.

Note: Depending on which solvent you are using, the chemical-shift referencing might be incorrect (i.e. your axis numbers might be incorrect). This shouldn’t be a problem. Just use “ref” to re-reference the spectrum.

-R.Shoemaker