



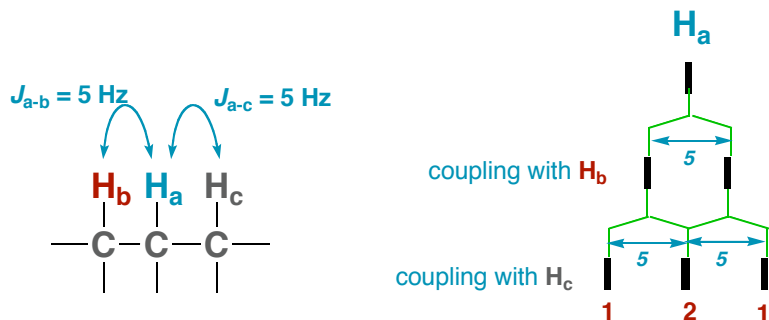
Chem 342 • Organic Chemistry II

Lecture Summary 04 - 23 Jan 2009

Chapter 13 - Nuclear Magnetic Resonance Spectroscopy

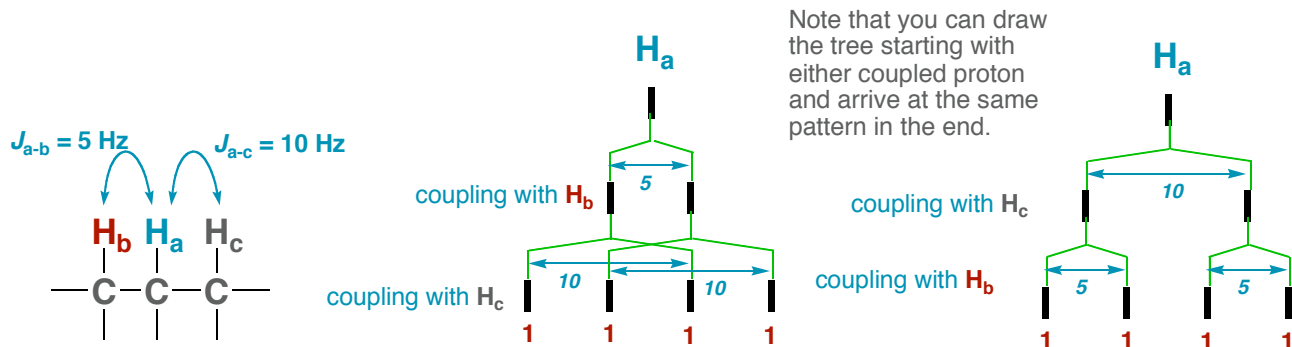
^1H NMR Spectroscopy

More complicated splitting occurs when there are non-equivalent hydrogens coupling the same nucleus with different coupling constants. The patterns can be predicted by building a splitting tree diagram with one nuclear coupling at each level.



If the coupling constants are the same, it looks just like coupling with a CH_2 group.

The pattern is **NOT** a triplet if the coupling constants are not identical



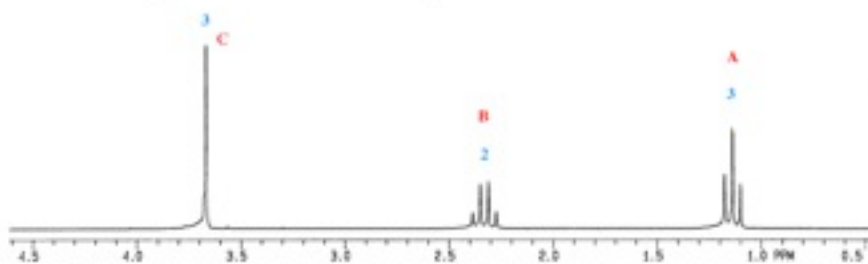
The more couplings that are present, the more complicated the pattern peaks can be. Again, if all coupling constants are the same, the peak pattern can be predicted by the $n+1$ rule.

Strategies for using Spectroscopy to identify structures.

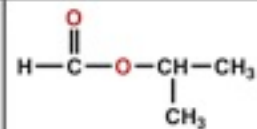
- Find the molecular formula (MS)
- Determine degrees of unsaturation
- Identify functional groups (IR, NMR)
- Try to find pieces of the structure (NMR #H's, coupling, number of carbons, etc.)
- Try to put the pieces together in a reasonable way
- Double check that your structure matches all the data given

Daily Quiz

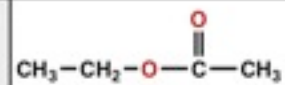
Q: Which structure corresponds to the following H-1 NMR Spectra?



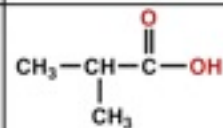
1:



2:



3:



4:

