

NMR AROMATIC PROTON COUPLING

In aliphatic organic compounds, the only coupling that you need to worry about is from adjacent protons ($J=0$ between any non-adjacent protons)...

In aromatic compounds, however, significant splitting does not only come from ortho protons coupled to each other, but also from meta (even para) protons due to conjugated π bonds.

Thus, coupling constants are a helpful tool for deciphering complicated aromatic regions, and are especially vital when the chemical shifts (δ) between aromatic protons are uncertain or overlapping.

Characteristic J constants

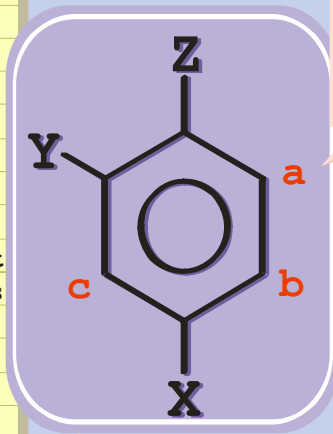
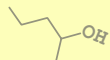
for:

Ortho: ~6-9 Hz

Meta: ~2-3 Hz

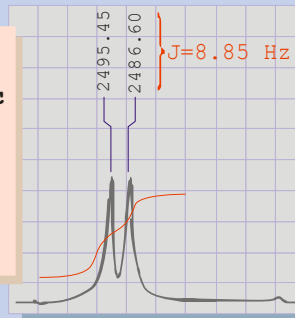
Para: ~0-1 Hz

(or pk. broadening)



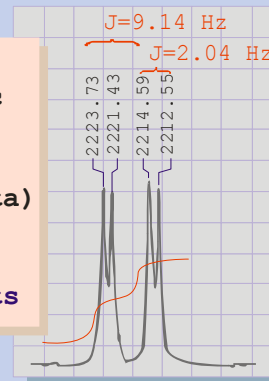
• split by **b** ($J \sim 9$ Hz, characteristic ortho)

EXPECTED PEAK:
doublet



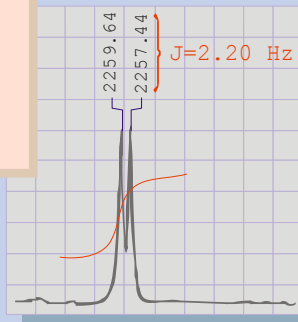
• split by **a** ($J \sim 9$ Hz, characteristic ortho)
• split by **c** ($J \sim 2$, characteristic meta)

EXPECTED PEAK:
doublet of doublets



• split by **b** ($J \sim 2$, characteristic meta)

EXPECTED PEAK:
doublet



*for further detail, please see G&M pg. 272-274.

