NMR Pre-Lab

1. View the image below (entitled "Spin ½ nuclei in magnetic field B0"), and explain the process it shows in a few sentences per step.

http://www.chem.wisc.edu/areas/reich/nmr/05-hmr-00-nmr.htm

2. Define the terms π-pulse and π/2 pulse. Explain their significance to the TeachSpin experiment.

3. What are the three different relaxation pathways measured in this lab?

4. What does resonance mean in the context of NMR? What does it mean for a signal to be off-resonance in qualitative terms?

EXTRA CREDIT:
What causes the spins to precess during the relaxation processes? The model we generally look at is called the Rotating Frame, which shows the spins moving about in a smooth essentially linear path for their relaxation (ignoring inhomogeneity), whereas the Laboratory Frame describes the spins as precessing about the z-axis as they relax back to their initial positions. Explain how the Rotating Frame accounts for this precession, and describe the shortcomings of this model in reality

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