1. Intro
2. Explain setup & point out variables
3. Explain dimensions fro sample
4. Show resistor and capacitor table
5. H and B equations
6. Plotted Hystersis Loop. Explain concept of remanence (y intercept) and (coercive)
7. Explain how values were accurately calculated
8. Remanence is how well an object retains its magnetic field after the applied field is removed. Iron has higher remanence than steel
9. Iron is the better Permanent magnet. Coercive force is the magnetizing force required to return the field to zero. Steel graph was a lot shorter and wider and had higher coercive force.
10. Steel is better suited as a motor. It can be decently magnetized and is fairly stable. Good for a situation where we wouldn't want something to become demagnetized easily.
11. We were also looking for area. We used a simpson integral to approximate …
12. area steel sample
13. Area of iron sample
14. Power can be found. V is volume of the magnetized area
15. We calculated the power disappeared as
16. Our estimate is 60W. Not bad as an estimate, but could be better
17. in the lab this is what we used as the magnetic length
18. personally I felt the steel wasn't warm at at on the ends
19. The volume was likely overestimated slightly
20. We adjusted variac voltage, kept track of XY coordinates
21. Using same equations for H and B earlier, made plot
22. We can determine relative permeability. mu not is relative permeability of free space.
23. Graph of relative permeability
24. Max relative permeability is… compare to real values
25. Calculate flux density
26. Plastic acsts as an air gap. Reduces magnetization. Eddy currents acting as damping
27. Overall went well. Hystersis looked good
28. Coercive and remanence made sense with what is expected
29. Power was a little off,
30. Probably due to the iron purity
31. Magnetic length was estimated. Needed a large margin of error. If purity was known, could be been better calculated