

Midterm Report

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1 Question 1

- I think I am pretty well prepared.
- Whenever I see group theory, that's where I get stuck/feels bad. I never had any group theory at all. And, I don't really like/ feel comfortable when some concepts are left hanging in the air. I always like to see the rigorous derivation, whether it is by myself or during the course.
- With that said, I think my preparedness is mainly contributed from my solid foundations in quantum mechanics. I am afterall a physics major. So, I think a semester or Quantum Mechanics would really help.
- I sort of have all the backgrounds needed to complete the course even with the advanced topics. But I feel like if there is a chance, a two semester course with the first semester focusing on the foundation and the second semester focusing on the materials that would be considered as research or advanced topics would be really cool!
- The most challenging part is perhaps to get all the advanced topics to the degree that I will be comfortable picking either of the topics as a research topic. I have always wanted to have a good overview of all the possible research topics in the sense that I would be able pick something that interests me and do real research about these topics. But to organize these information on my own is almost impossible since I do not know all the topics beforehand.

2 Question 2

- I think the materials are prepared very well given the limitation of the length of this course. I personally would like to see more detailed

treatment on more advanced topics. But I feel like there would be students who would get much less out of this if we focus on more advanced topics. So, now is a good balance for most people.

- The video recording and slides are EXTREMELY helpful when I do the homework. Whenever I have something unclear, I would just go over the related topics again. I am not able to think and learn while taking notes. So going back from time to time helped me a lot.

3 Question 3

- I did not really find any of the standard material hard to understand.
- However, I found the following slightly advanced material to be hard.
1: Error Correction Conditions: It involves some group theory that I did not feel comfortable dealing with. 2: Hybrid Classical Neural Network: Feels like the topic needs more time. I feel that I did not even have a vague understanding of it. 3: Just came across toric code today. Very confusing. Need more time with them.
- In general, I just read a bit more on the topic and I will get more out of those topics. The lecture sort of introduces the general notion to me. But we never had the time to go over the details and derivations and such. So actually trying to do the derivations myself really helped too!

4 Question 4

- I think the homeworks are great.
- I am a believer that we learn the most when we make mistakes. I tend to make some mistake when I am deriving or trying to solve problems I have never seen before. Going through them really helps me understand them. Usually in class, the derivation is kind of not too detailed. I personally likes to see the entire derivation steps. I am dumb. But when I try to do it, I get it clear and complete.
- I also check the answer key to see if there's a better solution or correct what I did wrong. And the annotations are very helpful. I do not have to compare line to line with the suggested answer key. I could just focus on the parts where you labeled out.

5 Question 5

- The notebooks worked very well.
- I think they are very useful in terms of connecting the knowledge on paper with the application in real life.
- I did not really try these notebooks but I have done most of them prior to this course.
- I am generally comfortable with coding.
- Another suggestion from my experience with the Computer Science education. If we ever had the resource, we should hold a lab session for the hands on experience with coding. That's what the computer science courses usually do. They would have a weekly lab session to have the students work on their own on coding problems. TAs would be there to help them, should any one gets stuck.

6 Overall

The learning experience has been great! Thank you so much for the time and effort you put into this course. It helped me a lot.