

Probability and Random Processes

ECS 315

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Announcements



Office Hours:

BKD 3601-7

Monday 14:00-16:00

Wednesday 14:40-16:00

Midterm Exam

- 7 Oct 2014 TIME 13:30 - 16:30
- ROOM BKD 3506 and 3507
- Closed book. Closed notes. No cheat/study sheet.
- Basic calculators, e.g. FX-991MS, are permitted.
- Cover all the materials that we discussed in class and practice in the HWs.
- Still haven't made it yet.

Tips for the exam

- Check the course web site next week for more information.
 - The cover page of the exam will be posted as well.
 - Read the instructions on the cover page before going into the exam room so that you don't have to waste time reading it again.
- Unless specified otherwise, show your work. Explain your steps. Provide reason.
- Because calculator is allowed, don't expect nice numbers as answers.
 - Don't forget to bring your calculator.
- Study
 - HW solutions (including HW6)
 - Quiz solutions
 - Sample Exams (2010 and 2013 exams are posted)
 - Lecture notes

Exam Grading

1. (3 pt) An electron is moving at 30 km/s in a uniform magnetic field which exerts a $F = 30 \times 10^{-12}$ N force on the electron. What magnetic field strength would be required if the field were 30° to the electron's velocity?

Someone plug-in
 $v = 30 \times \frac{2}{10^3} \Rightarrow \text{Ans } 7.5 \times 10^3$
 or $v = 30 \times \frac{2}{10^4} \Rightarrow \text{Ans } 3.5 \times 10^3$
 $q = 1.602 \times 10^{-19}$ C
 $10^3 \rightarrow \text{Ans } 1.248 \times 10^3$ T if forget to change the unit (-1)
 if plug-in 3×10^3 (don't know that $k = 10^3$)
 $\text{Ans } 1.248 \times 10^3$ T \rightarrow (-0.5) if plugin wrong number but write 30×10^3 somewhere.

Choose the right formula, but simply multiply everything (which suggest that the student can't distinguish F and B. (-2)
 Ans 7.21×10^{-26} T

$B = \frac{F \sin \theta}{qv}$ (-2)

use $q = 1.6 \times 10^{-19}$
 Ans 2.2×10^{-5} T (-1)

missing q when plugin (-1)

use $\cos 30^\circ \Rightarrow \text{Ans } 7.203$ kT (-0.5) more mistake (-0.5)
 use $\sin 60^\circ \Rightarrow$ (-1)
 no sin term $\Rightarrow \text{Ans } 6.242$ kT (-0.5) more mistake (-0.5)

missing v when plugin (-1)
 Ans 5.98×10^3 T

missing 10^{19} (-0.5)
 missing $10^3 \Rightarrow \text{Ans } 1.248 \times 10^{28}$ T (-0.5)

missing 10^{-12} (-0.5)
 missing $10^3 \Rightarrow$ (-0.5)

wrong unit $[\frac{N}{C \cdot m}]$ (-0.5)
 no unit (-0.5)

$F = qvB \sin \theta$

$B = \frac{F}{qv \sin 30^\circ} = \frac{30 \times 10^{-12}}{1.602 \times 10^{-19} \times 30 \times 10^3 \times \frac{1}{2}} \approx 1.248 \times 10^4$ T

plug-in correctly but wrong final answer (-1)

HW Grading

- Some are graded by a grader.
- **5 pts** for *attempting* to solve all problems.
 - Excluding the optional questions.
 - Missing parts are indicated on your HW and recorded.
 - If you see no remark on part missing, you get full score (5 pt). Otherwise, you lose a few pts for each of the missing parts.
- **5 pts** for correct solution of ONE part of a question.

HW Grading (con't)

- **5 pts** for correct solution of ONE part of a question.
 - Points deducted are shown.
 - If you see no point deducted, you get full score (5 pt).
 - Occasionally, you may see an “OK”.
 - This means your solution is not entirely correct or incomplete.
 - Study the posted solution carefully.
 - On the next HW or on the exam, I may take some points off.
- Even if there is not point deducted, don't feel overconfident!
 - One a part is graded. So, there may be some other mistakes.
 - Study the posted solutions carefully.

Some Comments about Working on HW

- Solutions from earlier years are provided on the course web site.
- It's OK to “compare your answer with” or “study” these solutions before you submit your version.
 - Hopefully, this is better than “comparing your answer with” or “study” your friends' HW.
 - You may also learn some new technique(s) from reading the solutions.
 - If my solution does not make sense to you, ask me right away even before you submit your HW solution.
- However, don't just blindly copy them or change variable name in there to turn it into your own solution.
 - Probably best if you attempt to write down your own solution first. Then, compare with my solution to see whether you get the right answer or whether you miss some steps in your explanation.

Some Comments about Working on HW

- I make these solutions available because ...
- I feel that it's better for you to check your answers as soon as possible when you can still remember what you did.
 - It take a while before you get your graded HW back and the question that you did incorrectly may not be selected for grading anyway.
- Some of you may obtain them by some other means anyway. So, it's only fair that ALL of you should have them.